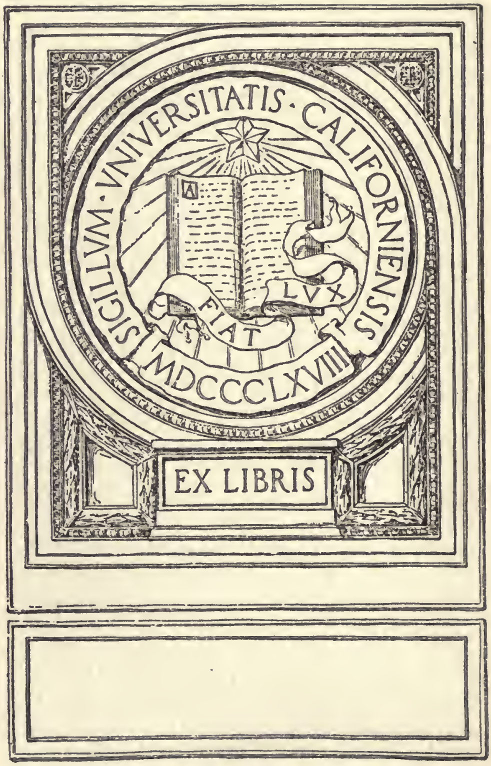

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UNIV. OF CALIFORNIA

A MANUAL OF

BELGIUM

AND THE ADJOINING TERRITORIES

Prepared by the Geographical Section of the Naval Intelligence Division, Naval Staff, Admiralty

LONDON:
PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE.
To be purchased through any Bookseller or directly from
H.M. STATIONERY OFFICE at the following addresses:
Imperial House, Kingsway, London, W.C. 2, and
28 Abingdon Street, London, S.W. 1;
37 Peter Street, Manchester;
1 St. Andrew's Crescent, Cardiff;
23 Forth Street, Edinburgh;
or from EASON & SON, Ltd., 41 and 42 Lower Sackville Street, Dublin.

Price 10s. 6d. net.

Printed under the authority of
His Majesty's Stationery Office
By Frederick Hall, at the University Press, Oxford.

DH421
G8

An Atlas is issued with this volume. A list of the maps in it will be found in Appendix C, p. 585.

NOTE

This volume, together with its companion atlas, is, in the first instance, a geographical study of Belgium. The subjects dealt with are those on which geography has had a powerful influence, such as the composition and distribution of the population, history, agriculture, mining and manufactures, communications and trade. Certain social questions have also been treated in outline, as hardly separable from the subjects above mentioned. In the main, however, the following chapters aim not at solving social or political problems, but at stating economic and geographical facts, apart from which no solution of such questions is possible.

Belgium has—except for her forty odd miles of seaboard—no natural frontiers. It was therefore desirable to go beyond her political frontiers and carry the description to the nearest natural boundaries. Roughly speaking, the boundaries adopted have been: (*a*) a line from Cap Gris-nez to Verdun, following at first the watershed of the Artois plateau and then that between the basins of the Meuse and Seine; (*b*) a direct line from Verdun to Metz; (*c*) the course of the Moselle to Coblenz and of the Rhine to the North Sea. We thus include a considerable strip of northern France, the whole Grand Duchy of Luxemburg, the Rhine Province of Prussia so far as that lies west of the Rhine and Moselle, with a fragment of the Reichsland west of Metz and Thionville; and a part of southern Holland.

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A word must be added on the treatment of these marginal districts. It has been in almost every case less exhaustive than that of Belgium, and has been undertaken only so far as was necessary in order to place Belgium in its true perspective. In the matter of mineral resources, and, to a certain extent, of agriculture, the treatment of the area is equally detailed throughout; in social and political questions, except so far as they are raised in the chapter on history, Belgium alone has been considered. In the majority of chapters, sections will be found on Belgium followed by similar, but less exhaustive, sections on other parts of the area concerned.

The parts of southern Holland which are included in our area have been much less fully treated than the other marginal districts. The broad belt of sparsely-inhabited plain which lies between the Belgian towns of the Scheldt basin and the Dutch towns of the Maas —the Campine or Kempenland—presents few features of interest, and forms something like a geographical frontier to Belgium on the north-east. Indeed, so complete is the division which it makes between the main population-centres of Holland and Belgium, that a study of the latter country can afford to ignore Breda and 'sHertogenbosch to an extent to which it cannot ignore Lille, Valenciennes, Aachen, or Cologne. On the other hand, the mineral resources of southern Holland, and its historical relations with Belgium, have been fully described.

CONTENTS

PAGE

NOTE 5

CHAPTER I. PHYSICAL GEOGRAPHY. 13–58

Introduction 13
Geology 15
River-systems 19
Physical Regions 29
1. The Chalk Downs 30
2. The Plains 33
3. The Ardennes–Eifel Massif 47
4. The Lorraine Plateau 52
Climate 55

CHAPTER II. POPULATION. 59–78

Races 59
Density of the Population 65
1. In Belgium 65
2. In France 70
3. In Luxemburg 72
4. In Germany 73
Birth-rate and Death-rate in Belgium . . . 75

CHAPTER III. LANGUAGES AND THEIR DISTRIBUTION. 79–105

Introduction 79
Distribution of Languages in Belgium . . . 81
The French-speaking Element in Flemish Belgium 81
The Flemish-speaking Element in French Belgium 83
The German-speaking Element in Belgium . 85
(*a*) The German-speaking Areas in Belgium 85
(*b*) The German-speaking Element in the rest of Belgium 88
General Linguistic Survey of Belgium . . 90
History of the Franco-Flemish Language-frontier 100
Distribution of Languages in the adjacent Territories 101
French Flanders 101
The Walloon District of Malmédy . . . 103
The French-speaking District of German Lorraine 104

PAGE
CHAPTER IV. HISTORY. 106–247

Introduction 106
Early History of the whole area 108

Belgium :
1. The Small Feudal States in the Thirteenth and Fourteenth Centuries 115
2. The Burgundian Period and the Unification of the Netherlands (1363–1477) . . 119
3. The First Period of Habsburg Rule (1477–1555) 122
4. Spanish Rule : the Revolt of the Netherlands (1555–1609) 126
5. The Spanish Netherlands (1609–1714) : the Origin of the Barrier System . . . 129
6. Austrian Rule and the Revolt of the Belgians against Joseph II (1714–90) . . . 133
7. The Southern Netherlands under French Rule (1792–1814) 136
8. Belgium joined to Holland (1814–30) . . 139
9. The Creation of the Kingdom of Belgium (1830–9) 143
10. Outline of the Belgian Constitution and Local Government 150
11. Note on Belgian Parties, 1831–1914 (Internal Policy) 156
12. The Political Position of Belgium in Europe, 1839–1914 162
13. The Formation of the Belgian Frontiers . 169
    a. The Southern (Franco-Belgian) Frontier 169
    b. The Northern (Belgo-Dutch) Frontier . 175
    c. The Eastern Frontier of Belgium . . 178

The Grand Duchy of Luxemburg :
1. Luxemburg before the Creation of the Grand Duchy (963–1814) 181
2. The Origins of the Grand Duchy (1814–39) . 184
3. The Grand Duchy (1839–66) 187
4. The Luxemburg Crisis (1866–7) . . . 189

PAGE
5. The Political Position of Luxemburg in Europe, 1867–1914 195
6. The Formation of the Frontiers of the Grand Duchy 199
7. The Constitution of Luxemburg 200

The Rhineland:

1. From the Thirteenth Century to the French Revolution 204
  a. The Imperial States of the Rhineland . 204
  b. The French Monarchy and the Rhineland 208
2. The French Conquest and the Prussian Annexation (1789–1815) 217
  a. The Rhinelanders of the Left Bank at the beginning of the French Revolution . 217
  b. The French Conquest and Annexation (1792–1815) 221
  c. The Settlement of 1815 229
3. The Rhineland since 1815 233
  a. Boundaries 233
  b. Political History to 1850 234
  c. Political History since 1850 236
  d. Economic History 238
  e. National Sentiment in the Rhineland . 240
  f. France and the Rhineland since 1815 . . 242
Note: The Neutral Territory of Moresnet . . 244

CHAPTER V. SOCIAL CONDITIONS IN BELGIUM. 248–71
Introduction 248
The Agricultural Population 249
The Industrial Population 253
Housing 258
Elementary Education 263
Pauperism 268

CHAPTER VI. THE FLEMISH QUESTION. 272–301
History of the Flemish Movement 272
The Present State of the Flemish Problem . . 286
International Relations of the Movement . . 290
The Relation of Flemish to Dutch 296
The Dialects of Flemish 298

PAGE

Chapter VII. Agriculture. 302–49

Part I. Belgium 302
General 302
The Land 307
Woods and Forests 314
Agricultural Survey of Belgium . . 315

Part II. France 323

Part III. Luxemburg 335
General 335
Viticulture 338
Live stock 338

Part IV. Germany 339
General 339
Viticulture 344
Agriculture in the Eifel 346

Chapter VIII. Mineral Resources. 350–419

Part I. Coal 351

Introduction 351
A. The Coal Resources of Belgium . . . 355
a. The Sambre–Meuse Field . . . 357
b. The Campine Field 361
B. The Coal Resources of France . . . 365
a. The Valenciennes Field . . . 367
b. The Boulonnais Basin . . . 369
c. The Pont-à-Mousson Basin . . . 370
C. The Coal Resources of Germany . . . 372
a. The Saar Field 373
b. The North Crefeld Field . . . 378
c. The Brüggen–Erkelenz Field . . 379
d. The Wurm–Inde Field . . . 379
e. The Lower Rhine (right bank) Field . 380
f. Brown Coal (Lignite) in Germany . 384
D. The Coal Resources of Holland . . . 386
a. The South Limburg Field . . . 388
b. The South Peel Field 388

PAGE

Part II. Iron-ore 389
- Introduction 389
  - A. The *Minette* Field 390
    - *a.* In France 397
      - 1. The Nancy Basin 400
      - 2. Basins of Briey, Crusne, and Longwy 401
    - *b.* In Germany 404
    - *c.* In Luxemburg 406
    - *d.* In Belgium 407
  - B. Iron-ores other than *Minette* . . . 408
    - *a.* In Belgium 408
      - 1. Sedimentary Formations . . . 409
      - 2. Fissure Veins 410
      - 3. Bog-ore 411
    - *b.* In Germany 412

Part III. Other Metals 413
- A. The Aachen Zinc-mines 413
- B. The Mechernich Lead-mines 417
- C. Silver and Copper 419

CHAPTER IX. INDUSTRY. 420–516

- Introduction 420

Part I. Belgium 422
- Industry and Coal-supply 422
- Coal-mining 424
- Quarries 428
- Metallurgy 432
- Mechanical Construction 436
- Spinning 447
- Weaving 451
- Chemical Works 455
- Pottery and Kindred Industries 463
- Glass 472
- Paper-mills 476
- The Diamond Industry of Antwerp . . . 480
- Home Industries 482
- History of Belgian Industry 484

PAGE

Part II. France 492
Industrial Survey of the French Area . . . 492

Part III. Luxemburg 507

Part IV. Germany 510
Industry in the Rhine Province 510
General Distribution of Industries . . . 511
Statistics of Hands employed. . . . 514
Wages in the Rhine Province 515

CHAPTER X. COMMUNICATIONS. 517–48
Introduction : Geographical Considerations . . 517
Railways 521
Main Lines 521
The Belgian Railway System 524
Belgian Light Railways 529
Waterways 535
1. The River-systems 537
2. The Watersheds 540
Summary 542
Seaports 543

CHAPTER XI. BELGIAN COMMERCE. 549–73
Foreign Commerce 549
Customs 559
The Commercial Policy of Belgium . . . 560
History 560
Economic Results of the Present Policy . . 564
Commercial Law 570
Patents, &c. 570
Company Law 571
Currency, Weights, and Measures 572

APPENDIX A. BIBLIOGRAPHY 574
APPENDIX B. TABLE OF CHIEF TREATIES . . 583
APPENDIX C. LIST OF MAPS IN THE ATLAS . . 585

INDEX 586

UNIV. OF
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CHAPTER I

PHYSICAL GEOGRAPHY

INTRODUCTION

On the western frontier of Germany, between the plains of Westphalia to the north and the trough of the upper Rhine valley to the south, lies a hill-district which falls partly in Germany itself, partly in Belgium and the Grand Duchy of Luxemburg. This district is dissected by the deep valleys of the lower Moselle and middle Rhine into three parts. East of the Rhine, and falling entirely in Germany, are the Sauerland, Westerwald, and Taunus. West of the Rhine and south of the Moselle is the Hunsrück, also falling entirely in Germany. North-west of the Moselle are the Ardennes and Eifel.

These six mountain-districts, three on each side of the Rhine, form geographically a single unit, known collectively in Germany as the Schiefergebirge, or slate mountains. They are the remnants of an ancient mountain-group, worn down by denudation into a plateau, here comparatively level, there more or less broken by hills, but preserving little trace of its original mountainous form. A new form has, however, been imparted to it by the erosion of its numerous rivers, which have everywhere cut their beds down into deep gorges, and so given rise to a new set of features. The whole of the Schiefergebirge may therefore be described as a high rolling plateau, here and there showing real hills, but everywhere scored and dissected by deep and steep-sided river-valleys, of which those of the Rhine and Moselle are the chief.

This volume is concerned only with the districts west of the Rhine and north-west of the Moselle; that is to say, the only parts of the Schiefergebirge with which it deals are the Ardennes and Eifel. It is, however, important to realize that the Rhine and Moselle valleys are, so to speak, mere accidents in the geography of the Schiefergebirge as a whole; they do not form physical boundaries, and the character of the hill-districts does not change very much from one bank to the other.

The Ardennes–Eifel massif then is physically continuous with the country to east and south-east of it. In the other directions three well-marked changes occur.

To the south it merges into the plateau of Lorraine, a bridge of high country running north and south to connect the Ardennes–Eifel hills with those of the Vosges, and forming the watershed between the French and German rivers.

To the west the high ground of the Ardennes sinks gradually, crosses the gorge of the middle Meuse—again a mere 'accident' in the general structure of the district—and finally sends out a long spur, the chalk downs of the Cambrésis and Artois, which maintain a fairly uniform height till cut off abruptly by the Straits of Dover at Caps Gris-nez and Blanc-nez.

To the north the plateau falls abruptly in the east, less abruptly in the centre and west, into the great alluvial plain of Belgium, southern Holland, and the German Rhine Province.

Of these physical divisions—the Ardennes–Eifel massif, the Lorraine plateau, the Artois ridge, and the Belgian plain—this volume treats the whole of the first, the second down to an arbitrary line drawn from Verdun to Metz, the north-eastern slope of the third, and the whole of the fourth up to the left bank of the lower Rhine. In other words, our boundaries are a line approximately following the main watersheds from Cap Gris-nez to Verdun, thence to Metz, thence down the Moselle to Coblenz, and down the Rhine to the sea.

GEOLOGY

The Schiefergebirge of which the Ardennes–Eifel massif forms part are, as has been said, the worn-down remains of an ancient mountain-system. In the centre of the massif, therefore, rocks of an early period come to the surface, to disappear towards its edges under successive later formations; while in the plains of the north only comparatively modern rocks appear.

The Ardennes–Eifel massif thus contains two large areas of Cambrian, in the Hohe Venn district and astride of the Meuse respectively. The former outcrop extends north-east nearly to Düren, and runs south-west, becoming wider, past Spa and Malmédy to Vieil-Salm, and almost to the valley of the upper Ourthe; the latter occupies the Meuse valley from Château-Regnault down to below Fumay, and extends westward to Hirson. These areas represent the points where the original elevation and consequent denudation of the mountain-mass have been greatest. The rest of the massif is composed of Devonian formations, chiefly the slates and shales from which the district derives its German name, with limestones in the Upper Devonian. One large area, the low-lying district astride of the Meuse at Dinant, is composed of carboniferous limestone; here the upheaval has been less, and the limestone in consequence is still to be found. It reappears in the trough of the Sambre–Meuse valley, separated from the Dinant district by a strip of Devonian formations known as the Condroz crest, and forming the relic of a sharp ridge, a lateral crest of the

Ardennes, which once stood between the Dinant and Sambre–Meuse depressions.

North of the Sambre–Meuse valley was once another mountain-system, not unlike that of the Ardennes, and known to geologists as the 'Anglo-Belgian plateau'. It extended northwards to Antwerp, and terminated eastward in a point somewhere near Liége; its extent may roughly be seen in the Atlas, Map 6, in the barren area intervening between the Campine and Franco-Belgian coalfields. This ancient mountain-district has been even more thoroughly denuded than the Ardennes, and it is now almost entirely covered by later rocks. Here and there, however, its old rocks come to the surface, as on the hills north of Namur, which are composed of Silurian formations, and in most of the river-valleys of southern Brabant and northern Hainaut, where the streams have cut through the later rocks and laid bare the Silurian, Carboniferous, and other formations of the Anglo-Belgian plateau. Farther north they disappear entirely beneath the strata—mostly clays and sands—of the Tertiary, and finally the Quaternary periods.

Westward the two old mountain-systems—the Ardennes and the Anglo-Belgian plateau—disappear beneath later accumulations. The latter disappears entirely; but the former is continued by the 'anticlinal' or elevated axis of the Cambrésis–Artois downs. Here the cretaceous formation comes to the surface, and the result is a strip of characteristic chalk country reaching from the sources of the Oise through Cambrai, Bapaume, and Arras to the Straits of Dover. Here, in the Boulonnais, a slight fresh upheaval has taken place which has brought the Jurassic limestones to the surface, and corresponds with the greater elevation of the summit of the downs above Boulogne, where alone they surpass 200 metres.

Southward from the central massif of the Ardennes–Eifel system lies Lorraine, geologically distinguished by its secondary formations. The lowest of these is the Trias, which thrusts down the Moselle valley between the Devonian plateaux of the Eifel and Hunsrück in a tongue of country known as the Triassic gulf of Luxemburg, and occupying, roughly, those southern districts of the Eifel which fall below the 400 metre contour-line. The Trias also extends across the Moselle between Trier and Sierck, in a belt running up the Saar valley.

South-west of the Trias three successive series of Jurassic formations—lower, middle, and upper—form the plateau of Lorraine strictly so called. The outcrop of this formation is bounded by a line from the headwaters of the Oise to Esch-sur-Alzette in Luxemburg, thence turning southward and skirting the height west of the Moselle, above Thionville and Metz. The portion of this line which begins at Longwy and ends about Nancy is of supreme importance in connexion with the iron-mining industry (see further, Chap. VIII). On the west the Jurassic district extends across the Meuse to include the Argonne forest, where it gives way successively to a strip of Gault and to the chalks of the Champagne.

Chalk (Cretaceous) occurs in a continuous belt running from the Straits of Dover south-eastward through the Artois and Cambrésis to the river Aisne, south of which it forms the Champagne Pouilleuse. From the main axis of the Artois two projections of chalk run north-eastward into the Belgian plain; one from Arras to Lille, forming the Mélantois district, a peninsula of typical chalk-country jutting into the heart of Flanders, and another from Cambrai and Landrecies towards Mons and the Haine valley.

Another Cretaceous area is to be found astride of the Meuse below Visé, extending on the east into the Herve district and almost to Aachen, and on the west into the Hesbaye, forming a strip of chalk-country running parallel to the Meuse almost as far as Namur. This area, however, is so much overlaid with clays and loams that the characteristics of a chalk-country hardly appear.

The bulk of the Belgian plain is composed of Tertiaries, chiefly clays and sands. In general, clays prevail in the north-west and form the central Flemish plain; sands form a belt from north-east to south-west through northern Flanders, the Campine and Brabant; and clays reappear in the south-east to form the Hesbaye. Geologically the Flanders clays are the oldest of these three series, and the Hesbaye clays the most recent. The whole Tertiary area is bounded by a line drawn—very roughly—from Aachen through Turnhout, the mouth of the Scheldt, St. Nicolas, Eecloo, Bruges, and Watten to Calais. On the south it is limited by the older formations already described.

Outside this again comes a district composed of Quaternary formations—sands, peat, alluvions, &c. This includes the Flemish 'maritime plain' and practically the whole of the lower Rhine and Meuse basins, up to about Bonn and Maeseyck respectively. The same formations, it need hardly be said, occur freely all over the area in the form of gravel, peat, &c.; the largest continuous deposit of the kind being in the Moselle valley between Metz and Sierck.

Eruptive rocks are conspicuously infrequent in the Schiefergebirge, if that mountain-system is compared with the similar systems of Brittany and these islands. In the eastern Eifel, basalt occurs freely in small isolated patches, and eruptive tufas are found over a large continuous area round Laach and Plaidt, west and south of Andernach on the Rhine, as well as in scattered patches near Gerolstein and Daun. In the Ardennes, porphyritic granites and diorites occur in the outcrop of Cambrian astride of the Meuse, and granite occurs west of Montjoie and Lommersdorf in the Hohe Venn outcrop.

Porphyritic granites are also found along the axis of the 'Anglo-Belgian plateau', where they are associated with small outcrops of primary rocks appearing in the river-valleys of southern Brabant and northern Hainaut. The chief outcrops of granite are at Gembloux, Nivelles, Tubize, Enghien, and Lessines.

River-systems

From the hydrographical point of view our area may be defined as consisting of the basins of the Scheldt and lower Meuse, with the left banks of the lower Moselle and Rhine basins. The subject, therefore, may be divided into three heads: the Scheldt system, the Meuse system, and the Moselle–Rhine system, to which must be added the rivers of the Flemish littoral and the head-waters of one or two west-flowing French rivers whose basins may be regarded as trenching on our area.

The Scheldt basin consists essentially of an east-and-west trough some 60 miles long from Ghent to Diest, through Termonde, Malines, and Aerschot, known successively as the Escaut, Rupel, Dyle, and Demer, into which a series of parallel rivers run from the south. More accurately, these rivers radiate slightly so that the western ones come in from the south-west, the eastern from south-south-west. From the transverse trough the water escapes through the defile of Rupelmonde to Antwerp and the Scheldt estuary. The whole system may thus be represented roughly by a fork or rake with six prongs, the handle being the lower Scheldt, and the prongs, from west to east, the Lys, Escaut, Dendre, Senne, Dyle, and Jette. Originally it is probable that the outlet to the sea occurred at Ghent, where in fact the land is lowest; a spur of almost imperceptible hills, revealed by the 20-metre contour line, intervening between the east-and-west trough and Antwerp.

Taking the members of this system—the prongs of the fork—in the order given above, the Lys rises in the chalk downs at the extreme south-western edge of our area, and falls rapidly at first, joined by numerous chalk-stream tributaries, into the very flat and low-lying plain, by nature a mere swamp, which extends from Aire to Armentières. It is in this basin that the Lys receives most of its tributaries—the Lacque, Clarence, and Lawe on the right bank, and the Melde and Bourre on the left, being the chief. Not far below Armentières the Lys receives its chief tributary, the Deule, which after rising in the chalk downs of the Artois emerges into the plains at Souchez, under the hill of Notre-Dame de Lorette, passes Lens and flows through a peaty valley in the chalk plain of the Mélantois to Lille, whence it turns north-west to join the Lys. After Armentières the plain narrows, hemmed in by the low hills of the Ferrain district on the right and of Ploegsteert and Messines on the left; but after Courtrai the country is again very flat. Finally, at Ghent, the Lys debouches on the left bank of the Escaut.

The Escaut is in every way the chief river of this system. It is no mere prong of the fork; its upper waters form a somewhat complicated river-system on their own account. Like the Lys, it rises as a chalk-stream in the south-western downs. Its source is at Le Catelet, 282 ft. above the sea, where it emerges from the chalk already a small river. It flows in a deep-cut valley through the downs of the Cambrésis to Cambrai, receiving water from various springs and torrents. Below Cambrai it is joined by the Sensée, a sluggish river flowing eastwards in a very marshy valley from the direction of Arras. At one time indeed the upper Scarpe, on which Arras stands, constituted the head-waters of the Sensée; but it was diverted into its present course by canalization many centuries ago, and the Sensée now derives its water entirely from the plateau immediately north of Bapaume.

The next considerable tributaries of the Escaut are the Selle, flowing north from Le Cateau and Solesmes; the Ecaillon and Rhonelle from the neighbourhood of Le Quesnoy, the latter debouching at Valenciennes; and the Haine, which drains the broad swampy valley between Mons and Condé and a considerable basin east of Mons. Geologically the Haine valley is the continuation of the great Sambre–Meuse valley from Liége to Charleroi. These are right-bank tributaries. The next, the Scarpe, is a left-bank tributary of some importance; it rises in a number of chalk-streams meeting at Arras (which once, as has been said, flowed not into the Scarpe but into the Sensée) and flows by Douai and St. Amand to join the Escaut halfway between Condé and Tournai.

The Escaut now flows between the Ferrain hills on the left and Mont St. Aubert on the right, turns north-east to pass close below the hills of Renaix, and continues by Audenarde to meet the Lys at Ghent.

The Dendre, which joins the Escaut at Termonde (Dendermonde), is the only river of the Scheldt system which can compare at all in size and importance with the Lys and Escaut; for though it is much smaller than either, it is navigable and forms a commercial artery of some importance. It is formed at Ath of two streams—the eastern and western Dendre—both rising in the hills north of the Haine valley. At Lessines it receives on the left bank the waters of the Ancre; on the right bank the Sille, the Marcq, and various small streams debouch. The Dendre and the three following rivers may be described as the rivers of Brabant; they form a series of parallel streams, more or less alike in general character, which together drain the district sloping northwards from the Haine–Sambre–Meuse valley. All alike run at first in deeply-cut valleys through the plateau, emerging northward into flat open country.

The Senne is formed by the union of three streams, the Senne, Sennette, and Samme, the third forming its true upper course. Its left-bank tributaries are insignificant; those of the right bank drain the plateau of Waterloo. It flows past Brussels to join the Dyle near Malines.

The Dyle is formed by the union of five small streams flowing out of the Hesbaye: the Dyle, Thile, Gentenne, Orme, and Nil. It receives two considerable tributaries, the Lasne on the left bank and the Train on the right, and flows past Wavre and Louvain to receive the waters of the Demer.

The Jette (Geete) runs out of the Hesbaye, past Tirlemont, to join the Demer at Diest, a point to which a number of rivers radiate from all surrounding districts. After the Jette the chief of these are the Herck flowing north-west from the direction of Tongres, and the Demer flowing west from Hasselt.

The Nethe system constitutes, as it were, an appendix to the Scheldt system. It drains the Campine plain south of Turnhout, and debouches into the Dyle below Malines almost opposite the mouth of the Senne, below which the Dyle takes the name of Rupel. The Grande Nethe is the largest and most southerly member of this system; it rises in the longitude of Hasselt and flows west, picking up great numbers of tributaries as it traverses the wet sandy plain of the Campine. Chief of these are the Moll Nethe, the Laek, and the Wimpe. The Petite Nethe, which joins the Grande Nethe at Lierre, drains the country between Turnhout on the north and Gheel and Moll on the south; its chief tributary is the Aa, coming from beyond Turnhout.

The Scheldt basin as a whole is bounded to north-west by the Flemish watershed, a hardy perceptible ridge separating it from the rivers of the littoral; to south-west by the summit of the Artois-Cambrésis downs; to south-east by the long straight watershed from Le Catelet skirting the Sambre–Meuse valley to Maastricht; and to north-east by the watershed of the Campine plain, an imperceptible line very roughly corresponding with the Belgian-Dutch frontier.

The name Scheldt, being the Flemish version of Escaut, is strictly its equivalent; but its application is usually confined to the estuary and lower reaches of the river, the name Escaut being generally used for the river above Ghent. There is, however, no fixed usage.

In comparison with the symmetry of the Scheldt basin, the Meuse system is highly irregular. We are here concerned only with the lower half of the system, northwards from Verdun. Here we find the Meuse running between high and steep hills of coral-rag belonging to the Jurassic series, which the river has chosen to penetrate rather than force a path through the lower but more tenacious Oxford clays of the Woëvre plateau farther east. The result is that the river runs in a trough from whose edges the slopes fall away east and west; so that the watersheds on either hand run close to the river, and it receives no tributaries except small torrents. These conditions hold good till Dun, where the river emerges on a comparatively open clay plain, marshy in character, and farther on, at Remilly above Sedan, receives a large right-bank tributary in the shape of the Chiers, which together with its tributaries the Crusne, Othain, and Loison drains the northern part of the Woëvre and of the Briey plateau. The Chiers is a fair-sized river flowing in a deeply-cut bed and rising in the Grand Duchy of Luxemburg, north-east of Longwy.

The next tributary is the Bar, which flows in on the left bank below Sedan. It rises at Buzancy in the latitude of Dun; but formerly drained a trough-like valley 75 miles long and parallel to that of the Meuse, the upper three-quarters of which have been stolen by the Aire, a tributary of the Aisne.

The banks of the Meuse now close in and become steeper, till about Mézières it enters the Devonian plateau of the Ardennes through which it cuts its way in a deep and tortuous *couloir*. In this region the only large tributary is the Semois, rising near Arlon and flowing past Bouillon in a gorge of increasing depth and intricacy. Between Bouillon and its mouth at Montherme the Semois travels in a continuous series of close ‘ hair-pin ’ bends, always at the bottom of a deep gorge and forming rapids from time to time.

Below the mouth of the Semois the course of the Meuse is extremely tortuous. Between Fumay and Givet it emerges from the Devonian into the Carboniferous formation, a change marked by limestone cliffs and scars replacing the steep monotonous banks of the earlier section. It is now traversing the Famenne, a comparatively low-lying and fertile plain in the heart of the Ardennes, where it picks up the Viroin and Hermeton on the left bank and the Lesse on the right; but has again to enter the Devonian formation below Dinant, and to escape through another gorge into the trough of the Sambre–Meuse valley at Namur.

This is a straight, somewhat deep and steep-sided, valley running north-north-east and south-south-west roughly from Landrecies through Maubeuge, Charleroi, and Namur to Liége. On the south it is bounded by the Ardennes massif, whose northern slope drains into it; on the north it rises quickly to a crest, beyond which the land falls away gently into the basin of the Scheldt system. The Sambre and Meuse have in consequence practically no left-bank tributaries during their course in this trough; the watershed is almost everywhere within a very few miles of their left bank. The only exception is the Mehaigne, debouching opposite Huy, which has cut through the watershed of the Hesbaye and stolen the head-waters of some of its streams.

The Sambre rises a little north of Le Nouvion, flowing westward as a small stream out of the hills of the Thiérache till it comes down on the col between the Thiérache to east and the Cambrésis to west, where it turns north and then north-east, picking up a series of similar streams out of the Thiérache as right-bank tributaries: the Rivierette, Petite Helpe, Grande Helpe, and R. de Tarsy. Already it shows the characteristic above mentioned of having no left-bank tributaries; the watershed on that bank is generally only 2 miles or so from the river. It proceeds in a very sinuous but otherwise direct course past Landrecies, Maubeuge, and Charleroi, always gathering right-bank tributaries from the hill district, till it joins the Meuse at Namur.

The next important tributary of the Meuse is the Ourthe, which debouches on the right bank at Liége. Close to its mouth, at Angleur, it divides into two rivers, the Vesdre flowing from the east and the Ourthe flowing from the south. These, with their various tributaries, are characteristic streams of the Ardennes–Eifel massif; shallow, rapid, and enclosed in deeply-cut and tortuous gorges. Only their head-waters lie out on the open plateau, generally in the marshes of the Hohe Venn and the Hautes Fagnes. The Vesdre comes from beyond Eupen in Germany, and passes successively Limbourg (where it is joined by the Gileppe, a mountain-stream which has been dammed into a great reservoir), Verviers, and Pepinster (where the Noigne comes in flowing from Spa and Theux). The other main tributaries of the Ourthe are the Amblève, which receives the waters of the Warche on its right bank and the Salm and Lienne on its left, and the Aisne. The Ourthe itself divides above Laroche into two streams both called Ourthe, one of which rises near the meeting-point of Belgium, Germany, and Luxemburg, close to the source of the Salm, while the other flows north-east from the neighbourhood of Neufchâteau. The Ourthe thus drains the whole northern central district of the Ardennes–Eifel massif.

After Liége the Meuse turns northward away from the hills to cross the plains in a great sickle-shaped sweep to its mouth. It receives very few tributaries of any size; the only important ones are the Roer, which drains part of the northern Eifel and the plains round Aachen, one of whose feeders is the Urft, a hill-stream which now feeds one of the greatest reservoirs in the world, and the Niers, which drains the flat country about Geldern, Crefeld, and München Gladbach. Farther down, on its left bank, the Meuse receives the numerous small streams fed by the Peel marshes and the northern slope of the Campine.

Of the Rhine-Moselle system only the left bank is considered here, and that only as far south as Metz. Here the Moselle is a good deal like the Meuse at Verdun. It is enclosed, though less decidedly, by oolite escarpments, and runs sluggishly in great loops over a bed of alluvion. Towards Thionville it is joined by the Orne, a left-bank tributary which with its innumerable little feeders drains the Woëvre and the southern Briey plateau. It is an intensely sluggish river, flowing over clay, and subject, as is the whole

Woëvre district, to great floods in wet weather; before reaching the Moselle it forces its way in a deep gorge through the oolite range which bounds the river-valley on the west.

The Moselle here flows over an open alluvial plain, the hills on either hand receding. Below Sierck they approach the river again, and its valley becomes more and more constricted between high and steep banks, the summit of which forms fairly continuous and level terraces. These terraces are a characteristic feature of the whole lower Moselle valley.

The first important tributary is the Sauer, which forms a complex little river-system draining the whole Grand Duchy of Luxemburg, as well as part of the German Eifel. It consists of a trough running east and west from Ettelbrück to Echternach, where it turns sharp south to join the Moselle—in all some 25–30 miles long. Into this trough tributary streams flow from all directions: the Alzette from the south, the Attert, Sure, and Wiltz from the west, and the Woltz, Our, and Prüm from the north. The last three form the first members of a series of south-flowing parallel rivers which drain the southern slope of the Eifel, and of which the remainder run direct into the Moselle, becoming shorter and shorter as the Eifel watershed converges with the Moselle at Coblenz. All these rivers of the southern Eifel run in deep valleys several hundred feet below the general level of the plateau.

From Trier to Cochem, that is for the greater part of its lower course, the Moselle pursues an extremely tortuous course, running in great irregular loops which make its valley a bad line even of land communications; the railway is compelled to cut off the loops by a continuous series of tunnels. For the same reason, and because of the shallowness of the stream, the Moselle is a bad line for water transport.

The Rhine from Coblenz to the sea is a magnificent waterway, flowing at first through a gorge in the Schiefergebirge between the Westerwald on the right and the Eifel on the left. The only considerable left-bank tributary in this section is the Ahr, one of the chief rivers of the Eifel. A few miles above Bonn the Rhine emerges into the plain, which it traverses in a curve not unlike that of the Meuse, gradually converging with that river till at their mouths they unite. In this section the only large left-bank tributary is the Erft, flowing in almost opposite Düsseldorf and formed by the union of a large number of hill-streams draining the north-east slope of the Eifel facing toward Cologne.

Of the rivers of the Flemish littoral only the Aa and the Yser have any importance. The Aa rises in the chalk down-country east of Etaples, and after flowing east for a time, turns north-east parallel to, and only 3 miles distant from, the upper waters of the Lys. It emerges from the chalk country and descends into a flat and swampy plain at St. Omer, much as the Lys does farther south into the plain of Aire; and the resemblance is increased by the fact that the plain of St. Omer, like that of Aire, has a ‘ bottle-neck ’, where hills close in on each side at Watten and then open out again into the Flemish maritime plain which the Aa traverses to its mouth at Gravelines.

The Yser is exclusively a Flemish river. It rises a little east of Watten, its source being separated from the plain of St. Omer by a hardly perceptible watershed, and, flowing east-north-east, it receives on its right bank various tributaries, draining in turn the hill of Cassel, the Mont des Cats, and the neighbourhood of Poperinghe and Ypres. After receiving the last, the Yperlee, it bends round to north and north-west in a semicircle to flow into the sea at Nieuport.

With the French rivers of the south-west we are hardly concerned. It is enough to enumerate them. The south-west slope of the chalk country is drained successively by the Liane, with its mouth at Boulogne; the Canche, lying opposite the sources of the Aa and Lys, and entering the sea at Etaples; the Authie, whose sources lie opposite those of the Scarpe; and (most important) the Somme, which corresponds with the Escaut and shows the same main characteristics. These four run more or less parallel to the Picard coast; the remainder all belong to the Seine system. The Oise, rising in a number of clay-streams of the Thiérache and thence flowing out into chalk country, is opposite the Sambre; and finally the Aisne, flowing at first north out of the Lorraine plateau, corresponds with the Meuse.

There is thus a curious symmetry between the two groups of rivers. The Meuse and Aisne, at first parallel and then abruptly diverging at right angles; the Sambre and Oise, both rising in the Thiérache and flowing parallel till on the saddle between the Thiérache and the Cambrésis they turn in opposite directions to join the Meuse and Aisne at Namur and Compiègne respectively; these form symmetrical groups, draining into the lower Meuse and the Seine. Secondly, the Escaut system is in many ways symmetrical with the Picardy series—the Escaut and its tributary the Sensée with the Somme and its tributary the Ancre, the Scarpe with the Authie, and the Lys with the Canche.

The question of water transport over these rivers is dealt with in Chapter X.

PHYSICAL REGIONS

The purpose of this section is to expand the outline given in the introduction to this chapter and to describe briefly, from the physical point of view only, the natural regions into which our area falls. The simplest possible division is into four regions: the chalk downs, the plain, the central plateaux, and the southern or Lorraine plateau. These we shall describe in the order given.

1. *The Chalk Downs*

From Cap Gris-nez it is 105 miles south-east to the summit of the col which separates the Sambre from the Oise and marks the division between the Cambrésis and the Thiérache. This straight line passes through Arras and Cambrai, and falls almost entirely north-east of the watershed, which runs in a gentle curve to south-west, joining the straight line at each end.

The watershed of the down-country is thus constituted by a strip of chalk plateau, 5 or 10 miles wide and over 100 miles long, passing immediately east of St. Pol and through Bapaume. This is level, undulating, open country, little broken by any features. Though it varies in height from place to place, its passes are never lower than 100 metres and its summits never above 200 metres, except in the extreme north-east, where in the Boulonnais the chalk gives place to an upthrust of Jurassic limestone which has offered more resistance to denudation. Here a number of ridges and summits about the head-waters of the Liane and Aa reach heights of 205, 207, 211 metres, but the ridge nowhere again rises above the 200-metre line. It sinks gradually to 170 metres north of St. Pol, and thence drops to a pass—the only decided gap in the whole ridge—of 130 metres between St. Pol and Arras; rises again to 180 metres, and remains above 160 metres for a long stretch, till near Bapaume it drops to 120 metres, and maintains that level for several miles. In the Cambrésis it attains heights of 140–50 metres, and finally the col between the Sambre and Oise is about 130 metres. The ridge is thus nowhere very high, but on the other hand its height is remarkably uniform and unbroken by hills and gaps. The places most suitable for a crossing by railway or canal are undoubtedly St. Pol, the Bapaume district, and the line Guise–Landrecies. The superiority of these over other regions is indeed very slight; but the map shows that Guise, Bohain, and Le Cateau in the east, Bapaume in the centre, and St. Pol in the west, are all road-centres of some importance, while all the three passes are used by railways and the easternmost by a canal.

While the summit of the plateau is level and unaccidented, its sides are deeply scored by ravines and river-valleys. The permanent rivers have their sources in springs, and are therefore in most cases fairly copious; their valleys, generally peaty and marshy at the bottom, are cut down in many cases to a water-bearing stratum, which produces a series of springs all along the valley-bottom or a little way up the sides. This is true only of the larger rivers; the smaller are mere torrents, flowing after rain in ravines and soon drying up.

The water-supply of the plateau is almost entirely confined to wells, often very deep. The larger river-valleys—Somme, Escaut, &c.—are wide enough to contain towns like Péronne, Cambrai, and so forth, watered by the river and its adjacent springs; but the smaller valleys are too narrow to contain the big villages of the down-country, and moreover seldom have permanent water. The villages accordingly stand on the open plateau and depend on wells. This condition is modified only where there are small deposits of tertiary clays on the summit of the chalk hills. Deposits of this kind collect water, and where overlaid by sand cause springs whose water is absorbed as soon as it leaves the clay and reaches the porous chalk. Such springs have, owing to the small extent of the deposits, a precarious yield of rather inferior water, but it serves for drinking-troughs and supplements usefully the supply from wells. Accordingly, these patches of clay are often chosen as the site for a farm or village.

The level, uninterrupted summit of the plateau is, as has been said, only about 5 miles wide. On each side of this strip it begins to be intersected by deep ravines and river-valleys. Between these valleys however the plateau continues, and its total breadth is 30 miles in the north-west between Etaples and St. Omer. This may be taken as the average minimum breadth, but the north-eastward limit is very hard to define. The high chalk country, or downs proper, may be defined as limited by a straight line from Calais to Landrecies, but there are two important promontories of low chalk country beyond this limit.

The first begins on the line Béthune–Vermelles, forming a kind of isthmus, and runs north-east, widening to touch Carvin on the south and Lille on the north, and reaching to a point half-way between Lille and Tournai. This is the Mélantois, a typical chalk district, though low-lying, and possessing in the Deule a river-valley which, though not deep, reproduces in its peaty and swampy nature the character of the larger rivers of the down-country.

The second low-lying extension of the chalk country includes the southern edge of the Ostrevant, north of the Sensée, and running down the left bank of the Escaut to Valenciennes, after which it extends north-eastward to include most of the Haine valley as far as Mons and a little beyond. This district, roughly bounded by Valenciennes, Condé, Mons, Thuin, and Maubeuge, may be conveniently described as Southern

Hainaut. It is a plateau running down in a regular slope from the high downs of the Cambrésis to the low swampy Haine valley and from the Sambre–Escaut watershed to the Escaut, in which direction its rather deeply-cut river-valleys run. There is no well-marked division of any kind between it and the Cambrésis, of which it is simply the north-eastern extension, gradually losing its character of chalk plateau and taking on that of a low-lying river-basin.

2. *The Plains*

The physical geography of the Belgian plain is much more complex than appears at first sight. It is necessary to distinguish the maritime plain, a strip of peaty land along the coast, largely below sea-level: Flanders, the low clayey plain of the north-west; Brabant, the high sandy plain of the centre; the Campine, the low sandy plain of the north-east; the Hesbaye, the high clay-district south of Brabant and the Campine; and a number of smaller divisions.

The maritime plain.—Beginning near Calais, the maritime plain runs eastward along the coast to Antwerp and extends inland for between 5 and 10 miles. Beyond the Scheldt it may be said to include the islands of the Scheldt–Meuse–Rhine estuary and the Dutch coast in the same estuary. It consists first of a mile or a mile and a half of dunes, intersected by strips of grass and subject to frequent fluctuations in strong sea-breezes; behind these the plain consists of peat lying on waterlogged sand and covered with a surface-soil of a sandy or clayey nature, sandy as a rule inland and clayey towards the sea. The whole is drained by canals (*waterings*, whence the French name for the whole district, ‘watteringues’), which are kept full of fresh water, and thereby keep down the level of the salt water which would destroy the agricultural value of the land. The sections of land between the canals are called *polders*, and in Flemish or Dutch this name is given to the district as a whole.

Parts of the maritime plain are below sea-level. The most conspicuous case is that of the Moëres, two large depressions on the Franco-Belgian frontier near Hondschoote, 8 square miles and 43 acres respectively in extent, and lying between 6 and 13 ft. below the level of ordinary high tides. Here the only means of drainage is pumping, which is done by means of Archimedean screws operated by wind or steam power.

The whole maritime plain has been formed by the sea, which in eroding the clay plain of Flanders has here deposited the successive strata of clay and sand. The district has sunk since the beginning of our era, but on the other hand a number of ports which were open till after the Middle Ages—e.g. Bruges, Sluys—are now silted up. As would be expected, the maritime plain runs up the rivers some way inland; thus it extends up the Aa to Watten and up the Yser to Dixmude.

The coast from Calais to the estuary of the Scheldt has no inlets and no ports, except those which, like Gravelines and Dunkirk, are created by improving the mouths of the rivers.

Flanders.—In the political sense Flanders has at various times included very various extents of territory; but geographers are agreed that it may be used in a physical sense for the country bounded by the maritime plain, the Lys and the lower Escaut, and extending from Antwerp to St. Omer. It is also generally agreed that a considerable belt of country, bounded roughly by a line running through Boom, Alost, Tournai, Lille, Béthune, Lillers, and Ardres, may be treated as semi-Flemish and described as ‘marginal Flanders’.

The main characteristic of all this country is that it forms a flat plain composed of tertiary clays. In parts, notably the Maggesland and Waes of the north, between Bruges and Antwerp, this character is obscured by the presence of sands, which connect these districts rather with the Campine than with Flanders, and they are accordingly treated under the Campine.

We may, however, distinguish a 'true Flanders' falling between Watten, Aire, Armentières, Courtrai, Ghent, and Bruges. This is a homogeneous district of blue, grey, or yellow clay, sometimes sandy and over 300 ft. thick. Quaternary surface-deposits are almost entirely lacking, and the soil is everywhere heavy and wet. The sandy character of the upper strata in the east and west of the region does not produce a drier soil, owing to the presence of the impermeable clay immediately beneath.

Flanders is by no means devoid of relief, and is in fact much more varied and picturesque than the plateaux of Artois and Cambrésis. It contains two types of hills, one about 200 ft. high, the other about 500 ft.; the former are fairly numerous, while the latter are confined to one small area between Ypres and St. Omer. Here are, from west to east, the hill of Cassel, an isolated hill, about 150 metres high, with the town of Cassel on its summit, and further east the Mont des Cats (158 metres), crowned by a Trappist monastery; Mont Noir (131 metres), Mont Vidaigne (135 metres), and Mont Rouge (140 metres), a group of which the first falls in France and the others in Belgium; and Mont Kemmel (150 metres), also in Belgium. The Messines–Wytschaete ridge, 3 miles east of Mont Kemmel, belongs to the lower group of hills, and only reaches a height of 80 metres.

Above the clay of Flanders once lay a stratum of tertiary sand, which has been removed by erosion from Flanders though not from Brabant. It still, however, remains in these hills, the summits of which are composed of it and consist of steep and barren slopes. The general dip of the strata being towards the north-east, the lower hills of central Flanders are almost entirely of sand; and in the north-east, beyond the line Bruges–Ghent, the sand appears at the general level of the plain.

In the hill of Cassel the sand is intersected by a stratum of clay a little below the summit; this forms springs, and thus makes it possible for the town to exist on the hill.

Among the lower hills of Flanders the most remarkable is the range, about 240 ft. high, which is pierced by the Aa at the defile of Watten. It falls steeply towards the maritime plain and gently towards Flanders, and forms a miniature wooded massif, intersected by deep ravines.

Outside Flanders proper lie the *Waes* and *Maggesland* districts above mentioned as consisting of a wet sandy plain, and also the belt of country described as ‘ marginal Flanders ’, which must now be described.

Near Antwerp this is mostly composed of the stiff clays (brick-earth) of Boom. These clays are quite distinct in character and geological horizon from those of Flanders. Beyond Termonde, and extending up the Dendre to Grammont and thence across to Tournai and Audenarde, lies a district whose valleys are Flemish in character, while the hills are sandy and resemble Brabant. It is thus a transition area between the two districts. It is more accidented than Flanders proper, and in particular contains the hill system of Renaix, an east-and-west line of hills extending from the Escaut at Avelghem past Renaix almost to the Dendre at Grammont, with summits of about 140 and 150 metres. Spurs run out to north and south, forming altogether a hill district about 10 or 12 miles square. A number of more or less isolated hills, notably Mont St. Aubert, north of Tournai (149 metres), are scattered over this region.

West of Tournai lies the *Ferrain*, a little district between the Lys and Escaut and north of Lille, which, like the district last described, is characterized by small hills. None of these, however, reach the 100-metre line, and the Ferrain differs in character very little from Flanders proper.

The valley of the Lys, between the Mélantois (or Lille chalk district) and Flanders proper, is a low and flat meadow country, and the same description applies to the plain of St. Omer through which the Aa runs.

The districts lying south of Lille, as far as Valenciennes and the Sensée, are sometimes loosely described as forming part of French Flanders ('Walloon Flanders' *la Flandre wallone*), and they are in fact physically in closer relation with Flanders than with any other region; they may accordingly be described here as a kind of extension of Flanders.

The country round Lille is traditionally divided into a perplexing number of little *pays*, each with its own name and individuality. The origin of these names is in general political, and though they are often used by geographers to indicate small natural regions, these usages vary from one geographer to another, and, even if justifiable, are seldom exact. We have so used the term Mélantois for the Lille chalk country, and Ferrain for the little district round Roubaix and Tourcoing. The Pays de Weppes is that portion of the Lys valley lying round and especially just east of Armentières; the Carembault lies south of this and between Lille and La Bassée; the Pévèle extends from the southern edge of the Mélantois to the river Scarpe, and is succeeded by the Ostrevant, between the Scarpe and the Sensée; east of the Pévèle and Melantois is the Tournaisis, and west of the Pévèle, with its centre at Lens, is the Gohelle. The district immediately round Douai is the Escrebieu, and the Baroeul is a tiny district between Lille and Tourcoing. These names are often useful from the purely geographical point of view, and will be used as required in this and other chapters.

The Mélantois has been already described as an extension of the chalk country. The *Pévèle* is a clay district. The clay overlies a stratum of sand, which forms a synclinal basin, so that the sand appears round the edge of the district (especially on the south-west) and underlies the clay in the middle. This sand, as would be expected from its structure, is permanently waterlogged, and forms a great reservoir of stagnant water. For this reason the soil, at those places where the sand appears, is not much drier than the impermeable clay. The whole district is therefore intersected by little streams, and is always very wet.

The Pévèle is a plain averaging 40–50 metres above sea-level. It contains various hills, of which the highest are formed, like those of Flanders proper, of sand. These are Mons-en-Pévèle (113 metres), Mont de Moncheaux (100 metres), and Mont de Bachy (72 metres). With these exceptions the country is very flat. The sands of Mons-en-Pévèle contain sandstones, which have been extensively worked for building and road-making; the hill as a whole is barren and uncultivated, like the summits of the higher Flemish hills, and inhabited only by rabbits.

South of the broad and swampy valley of the Scarpe lies the *Ostrevant*. This, like southern Hainaut, which adjoins it across the Escaut, is really a transitional district. In the west, between St. Amand and Valenciennes, it is flat, sandy, and clayey, and almost entirely covered with forest; in the west, towards Douai, it becomes more hilly, various ridges rising to 80 and 90 metres, and the subsoil is chalky. The hills are sandy and arid, some wooded and others bare, with rushes and bents, and were once crowned with a stratum of sandstone. They contrast strongly with the plain, which is covered with a fertile loamy soil like that of the Cambrésis. Below the sand of the hills come a stratum of tuffs, clayey sand and plastic clay, which gives rise to small springs.

On the whole the soil of the Ostrevant is permeable and streams are absent. In the east the sand contains water, but this is stagnant; further west the chalk absorbs the water and supplies springs in the deeper valleys (e. g. the Scarpe near Marchiennes), but not elsewhere. The water-supply in the western Ostrevant therefore depends on wells. The Marchiennes springs however are very abundant, and supply Roubaix and Tourcoing with 3,300,000 gallons daily.

St. Amand has sulphur springs, which become mineralized in the lower coal-measures underlying the Ostrevant, and mud-baths, consisting of alluvial sand containing vegetable débris which condenses the sulphur.

The Ostrevant practically coincides with the coal-field of the Nord department. The coal-measures lie too deep to affect the surface features, but the industrial conditions set up by coal-mining affect the whole district.

The same is true of the *Gohelle*, or district round Lens. This is a transitional district between the Pévèle and the chalk downs of the Artois; essentially it is a rolling plain intersected by the valley of the upper Deule, and overlooked from the south by the Artois escarpment, broken into the Notre-Dame de

Lorette ridge on the west and that of Vimy on the east by the ravine of Souchez.

Brabant.—The political province of Brabant corresponds very tolerably with a physical region to which we may apply the term Brabant in a geographical sense. This region is a plateau sloping northwards into the east-and-west trough of the Scheldt river-system, drained by a series of parallel rivers and distinguished by its sandy soil. It is thus clearly marked off from the clay plain of Flanders and the low sandy plain of the Campine on the north, and almost equally so from the loam-covered plateaux of the Hesbaye and northern Hainaut on the south.

The sand of Brabant is geologically the next series above the Flemish clay, and islands of it may still be seen, left *in situ*, on the hills of Flanders. East of the Escaut, as the ground rises, they become more frequent, and in parts continuous; this district, characterized by the Renaix hill-system, we have already described as 'marginal Flanders' and intermediate between Flanders proper and Brabant. The southern portion of the district, namely the triangle Tournai–Grammont–Ath, might even be defined as completely Brabançon in character.

With the exception of this triangle, however, Brabant in the geographical sense, as in the political, begins at the Dendre. The hills of the marginal district disappear except in a few isolated specimens to the north; there is merely a wide undulating plain lying 40–50 metres above sea-level, with a sand subsoil covered by 4 or 5 metres of loam.

Across the rather deep valley of the Senne lies another strip of the Brabançon plateau. Here the general level rises to 100 metres in the centre and 120 metres towards the south, and the plain is intersected by deep valleys and ravines. The sand crops out on the slopes and even forms the soil of the plain, which is in consequence somewhat barren and much overgrown with timber.

East of the Dyle valley the sandy plain narrows to a mere tongue in the north, bounded by a line from Wavre to Diest, south of which lies the Hesbaye. North of this line is the Hageland, a low-lying sandy plain bounded on the north by the Demer.

The sandy character of Brabant is thus most pronounced in the east and north. The loamy soil which characterizes the Hesbaye and northern Hainaut is indeed to be found, but chiefly in the west of Brabant proper, and the whole of the north is formed by a sandy plain not unlike the Campine.

The valleys are mostly shallow near their source (in the case of the larger rivers the sources fall outside the limits we have assigned to Brabant), but fall more rapidly than the general level of the plain, so that they become progressively deeper as they advance. Their sides are formed in the upper parts of sand; below this is clay. Springs occur freely at the junction of the two formations. The sand offers little resistance to erosion, and in consequence the central plateau, where the loamy soil is absent, is much intersected by ravines, which generally reach down to the water-bearing clay. These ravines are the cause of the hilly character of the country round Brussels. Farther west the surface-loam resists erosion better, and carries the water on its surface in the form of streams, so that the district between the Dendre and the Senne is little accidented.

The valley-bottoms, especially those of the Senne and Dyle, contrast strikingly with the arid plateau. They are fresh and green, and the villages cluster round the springs which they contain. Round Louvain these valleys are cut down to a depth of 50 metres below the plain, whose escarpments look from below like real hills, and are known locally as 'montagnes'. In southern Brabant the valleys penetrate down to the primary rocks of the 'Anglo-Belgian plateau', and in consequence the rivers run over and through schists, quartzites, porphyries, &c. This phenomenon is most marked in the upper courses of the rivers, falling in northern Hainaut, where it gives rise to extensive and valuable quarries; but it is also present further north, in Brabant properly so called, and in the Senne and Dyle valleys only disappears a few miles south of Brussels and Louvain. In the north of Brabant the rivers emerge into a level sandy plain and have practically no valleys at all.

Northern Hainaut.—Brabant is roughly bounded on the south-west by a line passing through Tournai and Tubize. South of this the ground continues to rise to the watershed, beyond which it runs down to the east-and-west valley of the Haine, passing through Mons. This watershed-district is distinguished by its loamy soil, covering a subsoil mainly of carboniferous limestone, which (with other formations appearing here and there) is quarried in the valleys all over the area. It is sometimes called the Tournaisis by geographers, since Tournai is its chief town; but historically that name belongs rather to a section of the left bank of the Escaut which geographically forms part of the Pévèle; and in consequence the name northern Hainaut is here preferred.

Northern Hainaut is bounded on the north by the sandy plateau of Brabant; on the west by the clay plains of the Pévèle; on the south by the Haine valley and the chalk plain of southern Hainaut, and on the east by the Hesbaye. At its western extremity the Pévèle clay appears at high points, the plain in general being here composed of tertiary sand covered with loam. Towards the east the clay disappears and nothing intervenes between the loam soil and the limestone. At its eastern end, in the longitude of La Louvière and Charleroi, the plain enters the tertiary region, and clays and sands intervene between the loam and the limestone; small streams and springs become more frequent and the country bears some resemblance to Flanders.

The general level of the district is 50 metres in the west, rising to 100 in the east. The carboniferous strata dip to the south. The Dendre and Senne both rise in this district. The Dendre is formed by a large number of little streams draining the loam of the northern region and cutting their valleys down to the carboniferous limestone, where they drain numerous springs and water numbers of villages. The Senne, with its affluents Sennette and Samme, draws its water chiefly from the springs of the limestone.

The Hesbaye.—South of a line passing roughly through Braine-l'Alleud, Wavre, and Tubize, Brabant passes into the Hesbaye. This district is sometimes reckoned as a subdivision of Brabant; but falling as it does mostly in the provinces of Liége and Namur, and containing only a slice of south-eastern Brabant province, it is best considered as a separate division. Its physical character, moreover, is clearly distinguished from that of the sandy Brabançon plateau.

The Hesbaye is a flat rolling plain sloping away from a central watershed to the Sambre–Meuse valley on the south and Brabant and the Diest river-basin on the north. Its character is given by the thick stratum of loam which here overlies the Brabançon sands in the north and the chalk in the south; this loam produces an admirable soil and makes all the Hesbaye a fertile agricultural district, as well as supplying local brickworks and causing certain physical characteristics. Thus the Hesbaye is well watered with surface-streams, which do not for the most part cut deep valleys. The few exceptions are larger rivers which have eroded their beds down to the underlying subsoil. The district is therefore little accidented, and is monotonous in appearance. It lies higher than any other part of the Belgian plain ; most of it is over 100 metres, and the ridge overlooking the Meuse valley is very largely over 200.

To the west the Hesbaye merges into northern Hainaut. To the north-east it sinks gradually till it passes into the sandy plain of the Campine. Its other boundaries are sufficiently defined by the valleys of the Sambre and Meuse.

The Herve country.—The corner of Belgium between Liége, Visé, Aachen, and Verviers forms a little natural region by itself, its characteristic features extending a little way both into Germany and into Holland. The Hesbaye country comes down to the Meuse between Liége and Visé, and a strip on the right bank of the river is of a similar character ; the ground then rises and the plateau of Herve begins.

Geologically the structure of this plateau is extremely complicated, the predominant formation being chalk, together with Wealden sands. But this and all other formations are on the Herve plateau proper covered with a thick layer of clay, generally flinty, and it is this clay that gives its physical and agricultural character to the district.

The Herve plateau stands above the 200-metre line, and its highest central region is a little over 300 metres ; but it is deeply scored by river-valleys which carry off the drainage-water of its numerous small streams.

The Campine.—The whole of the north-east of Belgium, north of a line from Malines to Maastricht, falls in this region, which also includes the adjoining part of Holland, where it is known as Kempenland.

It is a vast plain, absolutely without relief or incident except for its innumerable streams, which diverge from a watershed beginning near Maastricht at about 100 metres above sea-level and running close to Genck (alt. 79 metres), Lommel (50 metres), Turnhout (25 metres), and Oostmalle (24 metres), and passing the Dutch frontier at Starbroeck (12 metres) close to the mouth of the Scheldt. From this very low ridge the streams run north into the lower Meuse (Maas) and south into the Scheldt basin, the northern slope—if that word can be used—falling mostly in Holland.

The physical character of the Campine is given by its sandy soil. Waterlogged and barren, this gives rise to great stretches of woodland and waste and little else. The population is scanty ; cultivation is difficult and unremunerative. Communications are however fairly good, owing to the Escaut–Meuse canal, and this fact has permitted the formation of a group of factories in the Lommel neighbourhood. In the future the industrial life of the Campine will certainly develop, owing to the presence of a hitherto unexploited coalfield (see pp. 361–5). Agriculture will also develop by the application of intensive cultivation and chemical manure, as it has already done in the similar districts of northern Flanders and the Hageland.

In the north-east of this plain lie the great marshes of the *Peel* extending south to Weest, west to Eindhoven, and north to Grave on the lower Meuse.

Certain districts may be considered as physically belonging to the Campine, though usually treated as falling within other regions. Such are the northern margin of Brabant, with the Hageland near Diest and Aerschot, and the districts of *Waes* and *Maggesland* in northern Flanders. The latter region has not been described and may therefore be considered here. It is a wet, sandy plain, even wetter than the true Campine, because clay here lies at no great distance beneath the surface and prevents the water from draining away. The whole plain is therefore cut up into sections of two to five acres by drainage-ditches. It is also traversed by numerous canals which serve for drainage and navigation. The clay is connected more with the Boom than with the Flemish series, and consists of two strata, an upper in the Waes, exploited by the brick-works of St. Nicolas, and a lower in the Maggesland. Where this clay comes near the surface its presence gives rise to a moderately fertile soil, but the pure sand is barren. Trees grow everywhere, and by evaporating the superfluous moisture serve in a sense as a drainage-system.

In the Maggesland farms are less numerous than in the Waes, woods and uncultivated ground more frequent. Thus from an economic point of view Maggesland is more like the Campine than the comparatively prosperous Waes district.

The gulf of the Rhine.—The northern portion of Germany falling in our area, namely the left bank of the Rhine from Crefeld to Cleves, may be considered as physically an annexe of the Campine, except for a line of hills rising in places to 100 metres, which begins at Crefeld and follows the curve of the river to Cleves. South of this lies a triangle whose corners are roughly at Essen, Aachen, and Bonn, where the plain of the lower Rhine runs up in a gulf into the Schiefergebirge. This gulf, whose geographical centre is Cologne, is drained in the centre and east by the Rhine and its tributary the Erft, and in the west by the Roer which debouches into the Meuse at Roermond.

The plain is divided by a range of low hills known as the Vorgebirge, which, following the right bank of the Erft, bisects the angle between the southern and eastern edges of the plain. These hills belong to the tertiary period, and are economically important as containing the great deposit of lignite which supplies cheap fuel to Cologne and the neighbourhood (pp. 384–5).

The whole of this area is valuable agricultural land, passing on the south, through a transitional zone of well-watered pasture-country resembling the Herve plateau (see p. 44), into the barren hill-district of the Eifel.

3. *The Ardennes–Eifel massif*

The high plateau of the Ardennes–Eifel is reached from the north and west through various transitional regions. The plateau of Herve, with its continuation south of Aachen and Düren, has already been described; farther west are the Condroz, Famenne, and Thiérache.

The *Condroz* is the hill-district immediately south of the Meuse between Liége and Namur. It is composed of many narrow and steep ridges, running parallel to the Meuse valley and enclosing narrow straight valleys in the Carboniferous and upper Devonian series. On its northern edge the lower Devonian and Silurian suddenly come to the surface in a narrow belt. The whole character of the district, geological and physical, is that of a system of parallel ridges and furrows, broken across by one or two transverse valleys, of which the Hoyoux valley is the chief, draining into the Meuse. The summits of the ridges average about 300 metres in altitude.

West of the Meuse and south of the Sambre the same structure is prolonged into the little region sometimes called *Marlagne* and forming the extremity of the district known as ‘l’entre-Sambre-et-Meuse’. Here, however, the ridge-and-furrow scheme is less regular and more broken by transverse valleys. To the south of this small region a belt of heavily-wooded plateau country stretches from the Meuse at Dinant through Philippeville to the French frontier.

South of this wooded strip in the west and of the Condroz in the east lies the *Famenne*, a long depression running through Chimay, Givet, Rochefort, and Marche parallel with the Sambre–Meuse valley and separating the lower Condroz country on the north from the true Ardennes on the south. Geologically it is composed of the schists and shales of the upper Devonian, intervening between the Cambrian and lower Devonian to the south and the Carboniferous to the north. Its milder climate and comparatively fertile soil make it a fair agricultural country, and the land is in consequence free from timber except on the characteristic 'buttes' or small isolated hills with which it is studded.

West of the Famenne, and covering a large area astride of the upper Oise, is the *Thiérache*, a district which lies entirely in France but can hardly be omitted. The left bank of the Oise from Guise to La Fère is politically part of the Thiérache, but geographers prefer to attach this area for physical purposes to the Vermandois, the chalk plateau which lies back to back with the Cambrésis and centres round St. Quentin and Péronne; restricting the term Thiérache to the clay district which extends from Hirson to Guise and from Landrecies to Rozoy on the upper Serre.

The Thiérache, thus defined, is a transitional district between the Ardennes and the French plain, in many ways similar to the Herve plateau which connects the Ardennes with the Belgian plain. It is a rolling clay plateau—the clay here belonging mostly to the Jurassic series—well wooded and watered, and intersected by the deep ravines of its many rivers. Like Herve, it is a pastoral district, and much of the plateau lies above the 200-metre line.

South-east of the Thiérache is the *Porcien*, another marginal district of the Ardennes: an oolite plain sloping down from the Meuse watershed west and south of Mézières to the Aisne, cut up by deep river-valleys and consisting partly of forest and partly of agricultural land.

The central plateau of the true *Ardennes* runs out westward in a wedge-shaped district, the point of the wedge lying at Hirson, its northern edge being defined by the Famenne and its southern by a line passing through Hirson, Mézières, and perhaps Arlon. In this south-eastern part the natural boundary is somewhat indefinite. The base of the wedge is formed by the Belgian frontier.

This again falls into two main regions, the Cambrian district in the west, forming the point of the wedge and centring at Rocroi, and the Devonian district—the *Hautes Fagnes*—in the east. Each alike is a high plateau, ill-drained in spite of its deep gorges, covered with clay and peat and mostly overgrown by forest; the land has extremely little agricultural value. The marshy character of the plateau is further accentuated in the other Cambrian district which extends from the Salm and Amblève across the German frontier in a north-easterly direction to the edge of the plateau and constitutes the *Hohe Venn*, a district which will be further mentioned under the Eifel.

The *Eifel* is a triangular district which is generally regarded as including all the German country north of the Moselle and south of a line roughly joining Aachen, Euskirchen, and Coblenz. It falls into a large number of natural divisions, which are described below. Taken as a whole, the district consists of a plateau bisected by a single east-and-west watershed which runs up from Coblenz to a central point between Dahlem and Bütgenbach, namely the Weisserstein (690 metres). This point is the hydrographical centre of the Eifel, lying as it does at the head-waters of the Amblève, the Urft, the Kyll, and the Our; indeed most of the chief rivers of the Eifel radiate from this point and rise within a few miles of it. It is, however, not the highest point. There are three higher districts: the Hohe Venn to north-west, the Schneifel to south, and the Hocheifel some distance to the east and containing the highest summits of all.

Like the Ardennes, the Eifel is not a true hill-district but a high plateau dissected by deep river-gorges. Only one small area, the Hocheifel, shows the character of a hill region. Everywhere else the summits are merely undulating plains rising into ridges and sinking into hollows, but nowhere showing anything in the nature of peaks or crests. These plateaux give very poor agricultural land, and consist largely of fallow or waste moorland; in some cases, notably on the Hohe Venn (whence its name), they are mere swamps.

The swamps of the Venn lie 2,000 ft. above sea-level in a long ridge of Cambrian rocks running from the neighbourhood of Stavelot in Belgium north-east towards Düren, and then falling abruptly into the plains. Its summit, at Botranche near the frontier, is 2,280 ft. East of this lie similar ridges, almost level on the top and at first boggy, but gradually becoming more and more wooded. The Weisserstein above mentioned is the centre of this region. Further south lies the Schneifel, a ridge resembling the Venn, whose summit, the Schwarzer Mann, is 2,287 ft. Eastward from the Weisserstein the country remains well wooded; the heights progressively diminish to a saddle (1,500–1,800 ft.) traversed by the railway from Cologne to Trier and forming the main pass in the Eifel watershed.

East of this saddle the ground again rises to a ridge whose north-eastern part is generally called the Hocheifel and its south-west part the Salmwald. The Ahr and Kyll rivers drain the north-west slope of this ridge at its respective ends. The summit of the Hocheifel, the Hohe Acht, a basalt peak 2,468 ft. above sea-level, is the highest point in the whole district. Here the landscape has more the character of a hill-district than that of a plateau, and is finely wooded with deciduous trees. Farther east is the volcanic district which centres round the Laacher See, a crater-lake; and south of this lie the Pellenz valley and Maifeld plateau, small districts close to Andernach and Coblenz.

The southern slope of the main watershed is scored by very deep and rocky river-valleys lying more or less parallel. The western rivers, draining a vaguely-defined district called the Ösling, do not flow into the Moselle till they have been collected by the Sauer, the main river of Luxemburg. The rest—the Kyll, Salm, Lieser, Alf, Üss, Endert, and Elz—flow direct into the Moselle. The lower course of these rivers, except the most easterly three or four, passes out of the Devonian high plateau into Triassic country, a characteristic region for which the name Moselvoreifel has been suggested. Finally, between the Triassic 'Wittlich depression' and the Moselle valley from Schweich to Alf, stand the 'Moselberge', a range of barren Devonian hills belonging geologically and physically not to the Moselvoreifel but to the Hunsrück.

Parts of the Eifel show noticeable traces of volcanic activity, which has produced important results in the economic life of the districts affected. One such district lies near Daun and Gerolstein, between the Üss and the Kyll. Here a great number of volcanic craters may be seen, many of which are flooded and form the lakes or *Maare* characteristic of this district. Some of these craters have emitted lava-streams which give rise to beds of basalt, now in places quarried for building stone and millstones; and the volcanic soil favours agriculture. The other volcanic district lies in the hills above Andernach, and is sometimes called the Rheinvoreifel. It is a good deal smaller than the other, but in every way more remarkable. Its largest crater, the Laacher See, is a lake 1½ miles in diameter, the largest sheet of water in our area; and the lava-streams have given rise to very important quarrying industries dating at least from the Roman period. Volcanic minerals are also here worked for use in glass-making, concrete, and manure; and of the mineral springs, of which there are at least 300 in the two districts taken together, several—notably the Apollinaris spring in the Ahr valley—have acquired a considerable fame. Here again the volcanic soil is fertile.

4. *The Lorraine Plateau*

South of the Hautes Fagnes, the characteristic region of the central Ardennes, lies a transitional area, a zone passing through Mézières and Arlon. This is largely Triassic in origin, and may therefore be connected with the Moselvoreifel, the low Triassic plateau of the southern Eifel; it includes the southern half of Luxemburg, whose northern half lies in the Ösling district of the high plateau.

This Arlon belt is for the most part fair agricultural land. Its calcareous rocks yield a tolerably good soil: there is little swamp and not much forest, and the plateau hardly anywhere rises to 400 metres, whereas the Hautes Fagnes hardly ever sink below that altitude.

South of this transitional belt we come to Lorraine proper. It is geologically characterized by the Jurassic series, including the lower Jurassic in the east (Bath stone), middle (Oxford and Kimmeridge clays) in the centre, and upper (Portland beds) on the west. These three belts are in the latitude of Verdun and Metz clearly distinguished and parallel. The upper Jurassic oolites form the barren, heavily-wooded heights on each side of the Meuse valley; the middle Jurassic clays form the Woëvre plain further east; and the lower Jurassic oolites form the wooded heights of the Haye which line the Moselle valley. Here the arrangement of districts is symmetrical; but farther north all the strata bend round to the west and begin to converge till they reach a vanishing-point in the neighbourhood of Hirson. The Woëvre accordingly narrows as it trends north-westward and actually reaches the Meuse where the oolite hills stop short in the neighbourhood of Dun; the oolite Haye spreads out into the Jarnisy and the Briey plateau, which runs north and north-west to Longwy and Montmédy, beyond which the Triassic Arlon belt begins.

The *Briey plateau,* with its annexe the Jarnisy south of the Orne, consists of Bath stone (oolite) and clays. Its limestone character is most marked on the east, where the oolite crops out in fantastically shaped rocks and is quarried in several places, especially at Jaumont near Metz, under the name of Jaumont oolite; the clayey character more prominent on the west, where the boundary between the Briey plain and the Woëvre is not always very clearly marked. The whole plateau is unified by a surface-deposit of gravel and mud containing iron hydroxide, which masks the character of the subsoil. The rivers run in deep and tortuous valleys winding among oolite hills, and in general too narrow to admit villages. They have a very slight fall, and are in consequence liable to violent floods, though in dry weather they contain little water. Thus the Orne rises in wet weather 10 ft. above its normal banks and floods the neighbouring pastures for miles round. The smaller streams are comparatively torrential, except in the clayey west where they are sluggish. The northern rivers, Crusne and Chiers, are low in dry weather and violent in wet; but they have sufficient fall to be utilized as sources of power for numerous mills.

Longwy and Luxemburg are thus supplied with power by these and other streams.

The plateau of Briey owes its immense importance to the presence of *minette* iron-ore, for which see Chap. VIII, pp. 390 *seqq.*

The *Woëvre* (pronounce ‘Wavre’) is a plateau composed of Oxford clay and extending from the edge of the Briey plateau (a somewhat ill-defined limit, as above noted) to the Côtes de Meuse, by whose escarpment it is abruptly overlooked. It begins in a narrow strip north of Dun and broadens as it travels south-eastward to a greatest width of 12 miles between Verdun and Conflans, where it passes out of our area. West of the Meuse the Oxford clay continues north-westward from Dun and runs unbroken to the Thiérache; but this area, though geologically continuous with the Woëvre, is geographically distinct from it.

The Woëvre is a plain studded with limestone hills, outliers of the Côtes de Meuse. It is composed of a heavy bluish clay, remarkably uniform over the whole plateau except where its surface is enriched by calcareous deposits brought down from the Côtes de Meuse. The whole plain is extremely wet, dotted with large marshes and pools, and traversed by innumerable small streams, most of which feed the Orne. These streams in general rise in springs at the junction of the oolite and clay, and run eastward; a few flow west, penetrating the Côtes de Meuse in deep ravines and reaching the Meuse.

These streams are valuable fertilizing agents, bringing down oolite soil; but this is insufficient to affect the general character of the plain, which remains always too wet, clayey, and cold to have much agricultural value.

The *Côtes de Meuse* form the outcrop of the upper Jurassic (Portland) oolites. On the east this outcrop stands in abrupt escarpment, penetrated by a few defiles at the mouth of which a village usually stands. North of Verdun the wall is very little broken and extends in this shape as far as Dun, where the range of hills disappears. To west the Côtes de Meuse fall steeply into the Meuse valley, forming the right-hand or eastern side of a gorge through which the Meuse escapes from the Lorraine plateau into the low clayey plain north of Dun. The side of the gorge is broken here and there by ravines bringing down torrential water, more rarely by regular defiles carrying regular streams flowing westward from the Woëvre.

This line of hills—long, narrow, and steep—is agriculturally barren but heavily timbered, and its forests give rise to various local industries in the Meuse valley and in the villages of the Côtes themselves. It has from time immemorial been a defensible place of refuge against invasions rather than a district with any economic value of its own.

CLIMATE

The climate of our area presents few remarkable features. It is a temperate climate, resembling in general that of south-eastern England, but somewhat colder in winter and hotter in summer. Up the Rhine valley and south-east of the Artois–Cambrésis downs a drier and warmer climate than that of Belgium is found.

Along the coast the rainfall is fairly low and the temperature equable, owing to the presence of the sea, but as soon as the sea-coast is left behind the rainfall rises sharply and the changes of temperature become marked. The rise of rainfall is most abrupt in the west, where on the coast at Boulogne the yearly figure is below 27 inches, but rises a few miles east to over 40. All the north-western extremity of the chalk downs is in fact an area of high rainfall, having on one hand the lower rainfall-area of the Escaut basin and on the other the dry Paris basin, and connected with the wet Ardennes region by an isthmus consisting of the Artois–Cambrésis watershed.

Even in the *polders* region the climate is severe, and all over Flanders the winters are cold, foggy, and dull, with much frost; the summers are inclined to be sultry. These extremes of temperature are most marked in the sandy regions, especially where, as in the Campine, the natural lightness of the soil has not yet been modified by agricultural improvements. All over these plains violent changes of temperature are common; the rainfall,[1] on the other hand, is not high, and is uniformly distributed over Flanders, Brabant, and the Campine, except for two areas where it rises above 27·5 inches; namely a part of Campine itself, from Antwerp to Diest, and in the district between Ghent and Mons, where the Brabançon plateau rising out of the Flemish plain arrests the moisture-laden west winds.

Further south the rainfall increases rapidly. In the Hesbaye, Condroz, and Famenne it is over 27·5 inches; in the Herve plateau, eastern Condroz, and Charleroi neighbourhood, over 31 inches. It now rises rapidly to the summit of the Ardennes in the south and Hohe Venn in the east, both of which have a rainfall of well over 40 inches, and then declines again. The southern and eastern slopes of the Eifel, sheltered as they are by the heights just mentioned, have a low rainfall; that of the Rhine valley is as low as that of the Aisne valley. The Grand Duchy of Luxemburg has likewise a fairly low average, declining from about 30 inches in the west to 25 inches in the east. The Lorraine plateau is rainy in the west, where the Argonne rises out of the plains of Champagne, but becomes progressively drier towards the coast.

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[1] See Atlas, Map 1 A.

The Hunsrück and Westerwald repeat the high rainfall-figures of the Boulonnais, Ardennes, and Hohe Venn. In general the summits and western slopes of all these hills are characterized by a high rainfall, more markedly so as they lie farther west and so nearer to the sea; the eastern slopes are always comparatively dry, even when they lie at a considerable elevation. It is especially noticeable that the ridge of the Hohe Venn shelters the whole of the Eifel, and produces a rainfall-figure on the summit of the Schneifel (for instance) no higher than that of the Sambre valley at Charleroi.

The prevailing weather in Belgium is rainy, but the rainfall is not high; the moisture-laden west winds are mostly intercepted by the Artois and Boulonnais hills, and the Belgian plain is characterized more by fog, drizzle, and an overcast sky than by heavy rains. The same is true of the Nord department of France, which is physically part of the Belgian plain.

All over the country the late summer and the autumn are the normal wet season, the late winter and spring the dry. The summer rains are short and sharp, and produce little effect on the country generally; the autumn rains, on the other hand, are heavy and continuous, and at times so saturate the soil, especially in the clayey and loamy districts, as to stop agricultural work and to cause a general rise in the river-levels, often attended by floods.

The winds from north to south-east are all dry, and the small spring rainfall is due to the prevalence at that season of north-easterly winds. The worst storms are from the west and north-west; they occur especially in November, and are often accompanied by disastrous inundations from the sea. In general, westerly winds decidedly prevail; but all over the country the wind is very variable.

The climate of the Ardennes–Eifel massif is inclement. The rainfall is high, the winds violent, and frosts severe. Snow is frequent, and often falls or drifts to great depths.

The main characteristic of the climate of the area as a whole is its inconstancy. Unbroken spells of weather, good or bad, are rare; the climate of Belgium has indeed been described as uniformly changeable.

On the whole, it is a good climate for agriculture. The sandy and clayey soils require a good deal of moisture, and it is necessary that this should be evenly distributed if the soil is to be kept from drying up or cracking in dry spells and flooding in wet; thus the natural disadvantages of the soil are to some extent corrected by the climate. The moisture is largely responsible for the vigour of the vegetation; it has also a marked effect on the population, whose 'Flemish stoves' and cleanly habits are a reaction against the fog and mud by which they are surrounded.

CHAPTER II

POPULATION

RACES

BELGIUM is inhabited by two races, Flemings and Walloons. The Flemings are generally described as a Teutonic, the Walloons as a Celtic race; but these names are misleading unless used with caution. The true Flemings belong to the so-called 'Nordic' or Scandinavian race which inhabits the Scandinavian and Baltic countries, and is well known in the east of England; the type is tall, fair, and powerfully built, with grey eyes and a long, narrow skull. This race is predominant in the extreme north of Germany, but absent in the centre and south, so that it cannot reasonably be called Teutonic. The Walloons belong to the 'Alpine race', which is found all over central Europe in a belt from east to west, hardly ever penetrating to the coast-lands of either the Baltic on the north or the Mediterranean on the south. It is characteristic of central and southern Germany, Switzerland, and the greater part of France. The type is somewhat short and heavily built, dark in colouring, and having a short, broad skull.

Linguistic distinctions and racial distinctions seldom exactly correspond, and this is the case in Belgium. Roughly, it may be true to say that a Teutonic language is native to the Fleming and a Romance to the Walloon; but in point of fact the Nordic type is by no means so prevalent in the Flemish provinces as is the Teutonic language. Large numbers of Flemings by language are Walloons by race. The Flemish racial type is only dominant in the maritime plain; in Flanders itself the bulk of the population belongs to the Alpine race, i. e. consists of Walloons, crossed and overlaid with the Flemings, whose language they have learnt. In the Walloon provinces, on the other hand, the type is comparatively pure; the Nordic or racial Flemish element hardly occurs at all.

The 'Flemish question', therefore, is primarily not a racial question but a linguistic one. The barrier between the two halves of Belgium is not a distinction of blood and racial type so much as a distinction of language. Such a distinction of racial type does certainly exist, and is very striking, but it does not coincide with the *political* distinction—which is the linguistic distinction—between Fleming and Walloon.

The ethnological position of Belgium is in some respects parallel to that of this country. In each case a branch of the Nordic race invaded and partially colonized the country, imposing its Teutonic language—Flemish in the one case, Anglo-Saxon in the other—upon the part so colonized; but (i) leaving a considerable area of the country untouched and still talking its old language, Welsh or Walloon, and (ii) even in the Teutonized part never forming more than a fraction of the population, which has ever since been mainly composed, in England, of the dark, long-headed 'Iberian' race, and, in Belgium, of the short, dark, broad-headed 'Alpine' race. And just as the distinction between an Englishman and a Welshman is primarily one not of race but of language, so the cleavage between Flemings and Walloons is linguistic rather than racial.

The distinction is however, in each case alike, more than merely linguistic. The Welshman differs more or less in temperament, traditions, and ideals from the Englishman, and similar differences exist between the Walloon and the Fleming (using the terms hence-forward in the linguistic sense). These differences are due much less to an original diversity of stock than to the influence of a distinct environment and manner of life, emphasized by the linguistic distinction, which preserves the traditions of the group and hinders the exchange of ideas with its neighbours.

Thus the Flemings have always been inhabitants of a plain, laborious agriculturists, city-dwellers and traders. Intensive cultivation, architecture, civic life, commerce and industry have been their distinctive marks ever since they first developed a life of their own. In temper they are marked, and always have been marked, by extreme tenacity and conservatism; their laborious disposition is evident in all their activities—in the cultivation which has transformed the sterile soil of Flanders into one of the richest countries of Europe; in the slow building-up and jealous preservation of their civic liberties; in the patient work of the Flemish painters and the introspective thought of the Flemish mystics—and appears on its worse side as a certain dullness and intolerance of new ideas, a slowness and heaviness of mind which makes all progress, except what is attained by the most gradual stages, impossible. Where, however, such slow development has been given free play the genius of the Flemings has produced remarkable and original results in a great number of different fields.

While distinguished from the Walloon by his greater laboriousness and conservatism, the Fleming differs no less strikingly, in spite of a close linguistic affinity, from the Dutchman. The artistic gifts, the mysticism, the conviviality of the Flemings are foreign to the more austere and materially-minded Dutch. Holland has produced great artists, but there is much more of the artist and craftsman, much less of the mere trader, in the average Fleming than in the average Dutchman.

It has been observed that even their national drinks differ; the Fleming—a hard eater and a hard drinker—is a beer-drinker who has only lately taken to gin, the Dutch drink, to his own great detriment. This wide difference may be in part a difference of blood; for the 'Alpine' or racial Walloon element which is so strong in Flanders is relatively feeble in Holland, and this element may have infused into the Fleming a certain strain of Celtic character which the Dutchman does not share. But the difference has been accentuated for generations by the history of the two countries, dating at least from the time when Holland became Protestant, while Flanders remained Catholic, and culminating in the intensely unpopular Dutch rule over Belgium between 1815 and 1830.

The Walloon, on the other hand, is descended from a race of foresters and hill-dwellers. The Teutonic invasion which resulted in the formation of the Flemings was checked by the great forest-belt running across the country from east to west. North of this line—the modern language-frontier—lay sandy and clayey plains and great rivers, suitable for agriculture, city life, and trade; to south the country was mostly forest, whose riches consisted of timber, pastures, and minerals. The primitive Walloon was therefore a shepherd or a hunter; his industries were charcoal-burning, quarrying, digging and smelting iron-ore. City life was almost unknown; textile industries and commercial organization never existed, and the population was always, in comparison with the Flemings, wild and uncivilized.

In temperament, therefore, it is not surprising to find that where the Fleming is conservative the Walloon is revolutionary. He has little respect for institutions and little patience with slow and laborious tasks; in politics he is inclined towards socialism and anti-clericalism, and his sympathies and affinities are on the whole with France. He is more original and spontaneous than the Fleming, and when the Walloon race produces a supreme artist, like 'Orlando di Lasso' (Roland de Lassus of Mons) in the sixteenth, or Constantin Meunier in the nineteenth century, his work reaches a level which the more plodding Flemish mind, for all its artistic gifts, can never attain.

The Walloon country is now thoroughly industrialized, but with a few notable exceptions, such as the great woollen district of Verviers and the smaller woollen centres of Beaumont, Dinant, &c., the basis of its industry is still mineral. The Walloon industrial population still mainly—though on a vastly increased scale—quarries stone, mines coal, and works in iron. Textile industries, with the exceptions above noted, remain the monopoly of the Flemings. So far the ancient division of character remains, and it must further be noted that the Walloon has never really taken to town life, living as he does for the most part in vast semi-rural areas, where cottages, each with its garden or tiny plot of ground, are thickly scattered over the country-side. As contrasted with Flanders, the Walloon provinces are almost devoid of real towns.

The contrast between the two races of Belgium may, however, easily be exaggerated. To a Frenchman both appear stolid and lacking in vivacity and *camaraderie*; to an Englishman, apathetic and devoid of enterprise or initiative (e. g. in such matters as emigration or trade unionism); to a German, uneducated and without intellectual interests. Both Flemings and Walloons are indefatigable workmen and agriculturists, working long hours for small remuneration, and bringing to their task a high degree of physical strength and a certain amount of technical ability, though but little originality or inventive skill. Low wages and bad education impair the efficiency of each alike, and are probably responsible for many of the shortcomings which are sometimes ascribed to racial character.

Though the Flemings and Dutch may be described as a Teutonic stock, they are not Germans. Our area includes both High and Low German populations, the former in the Eifel and the latter in the Rhine plain; but the Dutch-Flemish stock must be distinguished from the Low German. The Dutch, Low German, and English languages are derived respectively from Old Dutch, Old Low German, and Anglo-Saxon, which together formed the Saxon as opposed to the Frisian group of Low German languages; the cleavage between Dutch and Low German is thus as old-established and as complete as that which separates both from English. In many respects indeed Dutch is more akin to English than to 'Platt-Deutsch', and in temperament and customs the Dutchman finds himself in closer relation with his English than with his German neighbours.

The frontier between the Dutch and Low German races may be said to correspond roughly with the German-Dutch frontier, though 2 per cent. of the population of Dutch Limburg are said to be Low Germans. Similarly, farther south, the German element penetrates within the Belgian border between Aachen and Liége (see further in detail, p. 85), and at Beho, while the Walloon enters Prussia at and near Malmédy. The population of the Grand Duchy of Luxemburg is Middle German, though the state is officially bilingual and relations with France have in general been close and friendly.

Finally in the west, south-west, and south of our area the true French, as opposed to the Walloon, stock occurs. Walloon, it should be observed, is not a mere dialect of French[1] any more than Flemish is a mere dialect of Low German; it is an independent language on much the same footing as Provençal, and occupies not only the Walloon provinces of Belgium (with the Malmédy *enclave* in Prussia), but also a considerable portion of France, including *la Flandre wallone* (see p. 37), south of Lille, with most of the Cambrésis, and also the Meuse valley up to Mézières. To west, Walloon marches with the French of Picardy; to south, with that of Lorraine.

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[1] In Chap. III we have not distinguished between Walloon and

DENSITY OF THE POPULATION

1. *In Belgium*

With an area of 11,373 square miles and a population (December 1910) of 7,423,784, Belgium has on average 662 inhabitants to the square mile, and is thus the most densely-populated country in Europe. This density is due not (as in Germany) to an exceptionally high birth-rate, but to a low birth-rate combined with an extremely small emigration-rate and a rather high percentage of immigrations.

Within Belgium itself, however, the density is by no means uniform. The following table gives the density of the population in the nine provinces:

Brabant . .	1,260	per square mile
East Flanders .	970	„
Antwerp . .	890	„
Hainaut . .	860	„
Liége . .	800	„
West Flanders .	700	„
Limbourg . .	295	„
Namur . .	260	„
Luxembourg .	135	„

French in considering the distribution of languages. This is because, though philologically they are distinct languages, Walloon speakers almost invariably know French, and there is no such political and social cleavage between the two languages as there is between French and Flemish, or between either and German.

If we take the individual *arrondissements* the divergence is still more marked; thus at one end of the scale Brussels has 2,400 inhabitants per square mile, Charleroi, 1,950; Liége, 1,830; Antwerp, 1,650; and Courtrai, Ghent, Alost, Mons, and Malines all over 1,000; while at the other end Neufchâteau has 103, Bastogne, 111; Marche, 121; and Dinant, 150. The most populous *arrondissement* is thus twenty times as densely populated as the least.

The map[1] (Atlas, Map 3) shows that, apart from certain very dense agglomerations which will be mentioned below, Belgium falls into two main districts —the densely-populated north and centre, where over a large area the population never falls below 250 to the square mile in the country districts, and the thinly populated south, where it hardly ever rises as high as that figure. The dividing line between these two districts is (very roughly) the Sambre–Meuse valley; so that the area of thin population is equivalent to the Ardennes and the area of dense population to the central and northern plains.

It must be observed, however, that the plains contain certain areas of low population, viz. the Campine, the Maggesland, and the extreme west of Flanders, while the hills contain some densely-populated regions adjoining Liége, Verviers, and Arlon. No part of the Campine exceeds 250 per square mile except Turnhout and a district south of it running down to Lierre and Herenthals, which has 390 in the east, in the Nethe valley, and 650 to 750 farther west towards Lierre.

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[1] For the Belgian portion this map is compiled from the separate figures for each *commune*, and the same applies to Luxemburg and Holland. The French and German portions are in the main (except e.g. in the *département du Nord* and the Coblenz–Trier region) compiled from figures for *Kreise* and *cantons*, and therefore do not enter into such detail.

South of this lie eastern Brabant and the Hesbaye, where the country districts have about 500 and 800 per square mile respectively; the rural population of the Hesbaye, as might be expected from the rich character of its soil, being decidedly high. Western Brabant and northern Hainaut have about 650–750 per square mile.

Flanders has a fairly uniform population except that (as above mentioned) it falls below 250 to the square mile in the Maggesland, near the Dutch frontier north of Eecloo, and most of the Maggesland is below 500. The Waes is about 500–750, and from Bruges to the French frontier the same figures prevail. South of the Lys the population is a trifle denser, and goes up to 900 per square mile.

South of the Sambre–Meuse valley the population figures are very much lower. Even the rich Herve dairy-country has only about 500; the Condroz and Famenne have about 150, and the high plateau of the Ardennes falls in many *communes* below 120, and hardly anywhere touches 150.

The foregoing figures concern the rural population only. A high percentage of the whole population lives in certain definite industrial areas which we must now enumerate. In all these areas the average population rises well over 1,000 per square mile; in many districts it exceeds 2,000 or 2,500 for many square miles together.

The largest of these districts extends from about Auvelais, on the Sambre below Charleroi, westward to the French frontier beyond Mons. This belt of coal-mining country, 45 miles long and 5 to 10 miles broad, has everywhere a population-density of over 1,000, and in three large areas—the basins of Charleroi, the Centre, and the Couchant de Mons, each 25 to 50 square miles in area—it never falls below 2,600.

Average figures of density for individual *communes* are 8,000, 11,500, or even 100,000 per square mile. The highest figures are reached in the Charleroi basin; in the Centre basin figures of 2,600–6,500 prevail, and in the Couchant de Mons 5,000–9,000. It must be further remembered that these are for the most part not strictly urban districts; the population of this belt is spread out over large areas of country in small houses, each having its own garden or small plot of agricultural land.[1] Hence the large extent of ground covered by a population which could be concentrated into one town the size of Manchester.

The districts of Brussels and Antwerp come next in order of size. That of Brussels is 20 miles long from north to south by 10 across, and within this elongated area, lying in the Senne valley, the population is everywhere over 1,000, and in a large central area (12 by 6 miles) over 2,600 to the square mile. Here, however, the concentration is much greater than in the Walloon coal-mining area just described; in the suburbs of Brussels densities of over 100,000 are the rule, and figures of 250,000, 300,000, and even more are common. This must accordingly be considered a true urban district, while the marginal portions (with density-figures of 10,000, 18,000, 20,000, or the like) more resembles the Charleroi district.

The Antwerp district is about 20 by 12 miles in extent, and its population is over 2,600 to the square mile in a continuous belt from Antwerp through Hoboken and Boom to Malines; 3,300, 4,000, and upwards are here the prevailing densities, so that in spite of its extent the district, except for the great city of Antwerp, supports a smaller population than those already described.

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[1] Allowing an average of five persons per house—a low figure for Belgium as a whole, but perhaps not for a Walloon district—one house per acre would mean a population of 3,200 per square mile. Allowing therefore for roads, railways, canals, and factories, a figure of 5,000 per square mile means that every family has on average half an acre of cultivated ground.

The Liége district, which is the next in size, again shows the characteristic features of a Walloon industrial region, i. e. the population not living under urban conditions but in densely-scattered cottages. Thus the *communes* immediately round Liége have density-figures of 3,800, 4,000, 6,500, or 7,500, declining in the marginal areas up and down the river to 2,300 and 2,000. Like Antwerp and Brussels, however, and unlike the south-western coalfield, the Liége district has a real urban nucleus in the city of Liége (population, 165,000).

Ghent is the centre of an agglomeration resembling in extent that of Liége, but (characteristically of a Flemish district) differing in being sharply divided into an urban centre—the city of Ghent, with a population about the same as that of Liége—and a relatively thinly-populated margin, with a density of little over 1,000; this being mostly inhabited, not, as in the Walloon districts, by factory hands living in semi-rural conditions, but by market and nursery gardeners.

There are two other main belts of dense population in Belgium. The first extends all up the Dendre valley from Termonde through Alost, Ninove, Grammont, and Lessines, all considerable manufacturing towns, to Ath. Here the prevalent population, due to industrial villages, is about 1,600 per square mile, rising sharply in the towns. The second extends for some distance along the middle Lys, with populations of 1,600–2,500 per square mile, and has its centre at Courtrai. This district is continuous, through Mouscron, with the very densely-populated region about Lille, Roubaix, and Tourcoing in France.

These seven districts are the chief centres of population in Belgium. There are many minor centres, such as Verviers, Louvain, Ostende, and Namur, but these and others are comparatively unimportant.

2. *In France*

The industrial region round Lille and the coal-fields of the Ostrevant and the Gohelle are in point of population comparable with the denser parts of Belgium, but otherwise the whole of our French area has a somewhat low population. Almost all the Nord department has indeed a population of over 1,000 per square mile; this is accounted for partly by industry, partly by the agricultural value of much of *la Flandre wallonne.* In *la Flandre flamingante,* however, north and east of St. Omer, the population sinks below this figure, only to rise in the neighbourhood of Dunkirk and Gravelines; so that the population of French Flanders is perceptibly lower than that of Belgian Flanders. The density again falls off to the south-east, where much of southern Hainaut and all the Thiérache have figures well below 1,000, except in the industrial region immediately west of Maubeuge. Thus in the Nord department the north-western and south-eastern *arrondissements,* Dunkirk and Avesnes, have general densities of only 520 and 380, while Hazebrouck has only 400, a figure that may be compared with the 700 which is a fair average for corresponding parts of Belgian Flanders. The centre of the department is densely populated; the *arrondissement* of Lille has an average of 2,400, including the great agglomerations of Lille, Roubaix-Tourcoing, and Armentières; that of Douai, 820, including various coal-mining districts and parts of the Pévèle and other agricultural regions; and that of Valenciennes, including the Ostrevant industrial area and adjacent agricultural districts, 1,000.

The down country is thinly populated ; its large and prosperous farms do not demand for their working a dense population, especially as labour at harvest-time is supplied by temporarily immigrant Belgians. Here accordingly the figure per square mile in the *arrondissement* of Arras—counting in the population of that town—is only 330 ; in St. Pol it goes down to 160. On the other hand, the Boulonnais and Cambrésis are comparatively well populated. The *arrondissement* of Boulogne has a figure of 520 ; that of Cambrai is brought up by the prevalence of village industries to 560.

The population now becomes progressively more scanty. In the belt of country running through Laon and Hirson it is about 160, 180, or 120 ; farther on, in the Porcien and upper Aisne valley, it drops to 100 over large areas, and never reaches 130 in a district of any size.

The Meuse valley, on the other hand, supports a comparatively dense population. The *arrondissement* of Mézières has an average figure of about 270, which, since the heights are largely uninhabited, implies a much denser population for the iron-working villages all down the river from Mézières to Givet. The same allowance must be made in considering the average figures of 220 for the *arrondissement* of Sedan and 140 for that of Verdun.

On the Lorraine plateau the population is everywhere very low and indeed decreasing, except where the rise of iron-mining has in recent years led to a great increase, as at Briey, or in old-established mining-towns like Longwy. Otherwise the density seldom rises to 100 per square mile. A characteristic *arrondissement*, that of Montmédy, had a density of 132 in 1851 ; in

1876 this had gone down to 112 and in 1906 to 92. It is said that this decline, which is general throughout the rural districts, especially affects the small but prosperous farmer, whose holding of two or three acres will not support, and does not require the labour of, a large family, while his position as a bachelor or childless man is too comfortable to be sacrificed.

3. *In Luxemburg*.

The area of the Grand Duchy being 999 square miles, and its population 246,000, the average density is 246 per square mile. Roughly speaking the main valleys, the centre, and the south-west are more densely inhabited, with over 130 to the square mile, while the plateaux of the north and of the eastern centre have a density almost everywhere lower than that, and in some *communes* going down to about 90. The population is, however, nowhere really dense except in the iron-mining (*minette*) district of the south-west, at and near Esch-sur-Alzette. The *commune* of Esch has a density of 3,000, and the neighbouring *communes* have 2,000, 1,600, 1,300, &c., per square mile. These *communes* only form a narrow belt across the south-western corner, between which and the capital intervenes a strip of agricultural land—part of the ‘Gutland’ which composes the south-western and central region of the Grand Duchy—with a density of 150, rising in parts to over 200 or falling to 130. The prevailing figure in the Gutland is about 150. Towards Arlon and near the capital the population is more dense, rising to 380 in the former instance, and 320–60 in the latter. In the suburbs of the capital it is 700–1,000.

The main river-valleys have a fairly dense population; in the Moselle valley the density seldom falls below 370, and goes up in places to 440. In the Sauer valley it varies from 180 to 250. At places like Remich and Echternach it is, of course, higher, and there is an area of fairly dense population (740–820 per square mile) up and down-stream from Diekirch. The plateau adjoining these rivers and east of the capital, however, is thinly populated (80–130), and so is the whole of the Ösling or northern plateau (90–120), except in the immediate neighbourhood of Clervaux (170–200) and Wiltz (420 per square mile in the *commune* of that name).

4. *In Germany*

With an area of 10,425 square miles and a population (1905) of 6,436,377, the Rhine Province as a whole has a density of 617·6 to the square mile. Its density is thus 93 per cent. of that of Belgium. We are here only concerned with those districts which lie west of the Rhine-Moselle valley, and here the very high densities of the Ruhr coalfield on the right bank of the Rhine (e. g. *Landkreis* of Essen, 5,137 per square mile, while the urban *Kreise* go up to 23,000) are never attained.

As there is no geographical frontier between Belgium and Germany, the distribution of population in the Rhine Province is on the same lines as that in Belgium. In each case the agricultural-industrial plain to the north has a fairly uniform population of 250–1,000 per square mile in the rural districts, rising to much higher figures near the manufacturing towns; in each case, again, the Ardennes–Eifel massif to the south has a density of below 250, dropping in parts as low as 100, and only exceeding 250 in the river-valleys. In short, the principles which govern the distribution of population in Belgium apply unchanged to the Rhine Province; whereas, with the exception of a belt from

Dunkirk through Lille to Maubeuge, they do not apply at all to France where the average density is everywhere much lower, nor yet to Holland.

The plain of the Rhineland has an average rural population of about 350 or 400 per square mile. This, it should be noticed, is distinctly lower than the density of Brabant and the Hesbaye, and we shall generally find that the population of a German area is slightly less dense than that of a corresponding district in Belgium. In comparison with the adjoining parts of Holland, however, the population of the Rhine plain is decidedly high. It is lowest in the north, about Cleves and Gelders (330 and 260), increasing rapidly towards Crefeld and München-Gladbach, and then dropping again to about 340 in the triangle between the three great agglomerations of München-Gladbach, Cologne, and Aachen. Up the Rhine as far as Bonn it is always dense, and even above that point a narrow strip of dense population accompanies the Rhine and Moselle to Metz, sending out arms up the main tributary valleys such as the Ahr valley, the Pellenz, the Wittlich depression, the Kyll valley, &c. These river-valleys have a general average of over 500 to the square mile.

The Eifel, as a whole, has a very low population. It is lowest on the Hocheifel (*Kreis* Adenau, average density, 108), Schneifel (*Kreis* Prüm, 98), and Hohe Venn (Montjoie, 134, Malmédy, 103), and since these figures include the towns it will be seen that the rural districts have a very low population indeed. Thus the rural population of Malmédy is only 85 per square mile, instead of 103; that of Eupen, on the slope of the Eifel above Aachen, is only 180 instead of 365, and so on. This low population on the Eifel plateau is maintained in equilibrium by a high rate of emigration, especially to the industrial districts of the Rhineland and Westphalia; for the birth-rate is high and the country cannot support a higher population without a degree of agricultural improvement which up till now has never been attempted and hardly even proposed.

In the southern and eastern Eifel the density is higher than on these central plateaux. The triassic Moselvoreifel has general averages of 150 in the *Kreis* of Bitburg, 168 in Wittlich, and 207 in Cochem. There are few towns of any size to raise these averages, which are chiefly due to the high population of the Moselle valley and its tributaries. In the east the averages are higher still. The rural *Kreis* of Coblenz has 670 inhabitants per square mile; that of Mayen, with its important quarries at Mayen, Niedermendig, and Plaidt, has 316, and that of Ahrweiler, with the vineyards and watering-places of the Ahr valley, 300. In smaller districts the differences in density are remarkable. The quarrying district of the Pellenz, as a whole, has about 420 inhabitants to the square mile, and in a small area round Niedermendig a figure of 630 is reached. In the Ahr valley itself the density figure is 1,190, while on the heights of the Hocheifel close by it goes down to 75. The Laach district or Rheinvoreifel has the fairly high figure of 240, while in the Maifeld the average population varies from 390 near Coblenz to 200 on the southern slopes.

BIRTH-RATE AND DEATH-RATE IN BELGIUM

The Belgian birth-rate, like that of most west European countries, is falling rapidly. Between 1830 and 1884 it never fell below 30 per thousand of the population, except during the great period of distress and scarcity (1846–56). From 1885 to 1900 it stood between 28 and 30, but since 1902 it has fallen rapidly and steadily. In 1902 it was 28·4; in 1906, 25·7; in 1911, 22·9; and during the same period the number of births showed a parallel decline from 196,000 to 172,000. If this rate be compared with other European figures for the same year (e. g. Prussia, 29·4; Austria, 30·7; England and Wales, 24·4; France, 18·7), it will be seen that Belgium has a smaller birth-rate than any European country excepting only France, where, however, the yearly decline in the birth-rate is slightly less rapid than in Belgium.

In forming conclusions from birth-rate figures it must not be forgotten that methods of registration differ in different countries. Thus a child dying within a few minutes or hours of birth is in Holland, Belgium, and France registered as a still-birth, and not included in the birth-rate, which only includes legitimate children alive at the time of registration. In other countries a child in this situation would be registered as born alive and its death would swell the figures of infantile mortality. Thus in France, Holland, and Belgium both the birth-rate and the infantile death-rate are lower than they would be were the registration carried out according to our method.

The birth-rate of the Flemish provinces is about 20 per cent. higher than that of the Walloon. Thus in 1907 the former had a figure of 29·9, the latter 24·8. Contributing causes of this may be sought in the Catholicism of Flanders, an influence everywhere opposed to the restriction of families; in the Socialist advocation of such restriction, which has naturally made especial headway in the Walloon districts; in the tendency of the Walloons to be affected by French manners and ideas; and no doubt also in the poverty, ill education, low wages, and general bad conditions of the Flemish working classes; such conditions being generally found to induce a higher birth-rate. In figures per thousand married women, the difference between the Flemish and Walloon provinces is even more striking. The average birth-rate for 1899–1901, so reckoned, comes to 267 per thousand for the Flemish population and 161 for the Walloon, a difference of 40 per cent. This shows that the low Walloon birth-rate is not due to a low marriage-rate. Indeed the marriage-rate is —though slowly—increasing, and so is the proportion of early marriages. It may also be observed that the country districts have everywhere a slightly higher birth-rate than the towns.

The rate of infantile mortality in Belgium is decidedly high, and is only exceeded in Europe by Austria, Prussia, and Italy. This rate is highest in the towns and lowest in the rural districts; it is also very much higher in the Flemish than in the Walloon districts. (The following figures apply to the average for the years 1899–1901.) For the whole country the rate is 161 per thousand births.

Flemish provinces	198·5	Towns	181
Walloon provinces	133·9	Country	141

In certain Flemish towns the rate is enormous; Roulers, 312, or nearly one-third of all children born; Ostende, 290; St. Nicolas, 277. In the Walloon towns the highest figures are Jemeppe (181), Jumet (163), and Damprémy (159). This very remarkable difference between the Flemish and Walloon districts is doubtless due to the low wages, the prevalence of slum life and of married women's work in factories, and in general to the lower standard of life in the Flemish districts. It will be observed that the higher Flemish infantile death-rate practically neutralizes the higher birth-rate, so that the average number of children[1] who reach maturity is hardly higher in a

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[1] The actual figures work out as follows. In the Flemish districts

Flemish district than in a Walloon. On the other hand, the Walloon family is smaller than the Flemish because the Walloon marriage-rate is higher.

The same broad facts are shown by analysing the figures for the mortality among children between one and five years old; we need not enter into these in detail.

The general death-rate of Belgium (17·3 in 1902, 16·4 in 1911) shows a fairly steady decline, and is distinctly lower than that of France (19·6 in 1911) or any part of Germany, while slightly in excess of the United Kingdom, and a good deal higher than Sweden, Norway, or Denmark. On the whole the death-rate is not as high as would be expected from the density of the population and the trying character of its industrial employment. Nor again is the urban death-rate much higher than the rural; this is certainly due to the large numbers of industrial workers who live (and therefore die) in the country, though they work in the towns. The general death-rate for the Flemish area—especially the Flemish towns—is higher than that for the Walloon; in some of the former it rises to 25 or even more, while in the Walloon towns it never reaches 20, and very seldom 18. The textile districts—Ghent, Courtrai, &c.—seem in general to have the highest death-rates; the rates for Antwerp and Brussels are in comparison low.

30 children are born annually (1907) per 1,000 of the population; of these 24 survive their first year and 23·4 their fifth. In the Walloon districts 25 are born per 1,000; of these 21·6 survive their first year and 21 their fifth.

CHAPTER III

LANGUAGES AND THEIR DISTRIBUTION[1]

INTRODUCTION

THE languages with which we are concerned are, in order of their extent within the area, (1) French, (2) Flemish and Dutch, (3) German. It is possible to enter into distinctions (see p. 64 and note) between French and Walloon, High and Low German, and a number of more or less varying dialects of Dutch and Flemish; but these distinctions have little if any importance for our purpose. For this purpose Walloon is best treated as a dialect of French; and Dutch and Flemish, in spite of local variations, are regarded as one homogeneous language. The same applies to the various dialects of German.

1. French, including Walloon, is spoken over the whole of the French territory falling in our area, except for the Flemish *enclave* adjoining the western frontier of Belgium and bounded roughly by the line Merville—Aire—St. Omer—Gravelines. It is also spoken in part of German Lorraine and over the southern half of Belgium, south of a line running east from Menin through Renaix and Tubize to the Meuse a little north of Visé. This is the Franco-Flemish 'language-frontier' of Belgium. In this southern part of Belgium are, however, a few districts with a slight preponderance of German. Finally, French is widely spoken in the Flemish area of Belgium, and in Brussels may almost be said to predominate.

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[1] Atlas, Map 4. This chapter deals, so far as Belgium is concerned, with statistical and geographical facts only; the political bearing of the distribution of languages in Belgium is dealt with in Chapter VI.

2. Flemish is the name applied collectively to a number of dialects spoken in the Belgian provinces of Flanders, Antwerp, Limbourg, and northern Brabant and in the Flemish *enclave* of northern France. These dialects do not form a single well-marked language distinct from Dutch; their differences from Dutch, as well as from each other, are dialectical only. For the relations between Flemish and its dialects on the one hand and Dutch on the other see pp. 296–301.

There is a slight Flemish infiltration into the French-speaking areas of Belgium and northern France; but this is very much smaller than the reciprocal infiltration of French into the Flemish areas.

3. The whole eastern part of our area is German-speaking. The language frontier between Dutch in the north and French in the south corresponds only very roughly with the political frontier between Holland, Belgium, and France on the one hand, and Germany and Luxemburg on the other. Thus in the north a considerable Dutch-speaking area projects into the *Kreis* of Cleves in Germany; farther south German predominates in a few *communes* of Belgium between Liége and Aachen, again in the *commune* of Beho, at the meeting-place of the Belgian, German, and Luxemburg frontiers, and over a great part of the *arrondissement* of Arlon. At Malmédy, on the other hand, a solid block of almost entirely French-speaking *communes* projects into Germany; and German Lorraine contains large districts contiguous to the frontier which are predominantly French-speaking.

Details of the distribution of these languages may best be seen from the maps in the accompanying atlas. The following observations will, however, serve to explain certain important principles which regulate this distribution.

DISTRIBUTION OF LANGUAGES IN BELGIUM

The French-speaking element in Flemish Belgium.—Languages are least mixed in rural districts, where the population is grouped in small villages, occupied in agricultural work and stationary over long periods. Industry, towns, and much-frequented lines of communication tend to increase the admixture of other languages not only absolutely, but relatively to the total local population.

Thus, in the Flemish area of Belgium, the Campine presents a uniformly low figure for French-speaking persons. It is a country which has very little industrial development; the life is rural, the population thin, and the villages mostly small and isolated. On the other hand central Flanders, with its much thicker population and high industrial development, has a French-speaking percentage three or four times that of the Campine. Within each one of these districts, again, the highest French figures are found in manufacturing places such as the Overpelt district of the Campine, while the figure increases with the size of the towns, till at places like Ghent it is quite three times the average of the surrounding country. With the development of the Campine coalfield it may safely be predicted that the French-speaking percentage in the *arrondissements* of Hasselt and Maeseyck will be doubled.

Almost all the considerable towns of Flemish Belgium will be seen to have a French-speaking percentage higher than that of the surrounding country. In most cases this local rise of the French figure is entirely restricted to the town itself; small villages immediately outside it are uninfluenced. Thus Ostende, as a large town with a great number of foreign visitors, has 29 per cent. of French speakers; the immediately adjoining villages of Steene and Zandvoorde have only 2 per cent. and 4 per cent. respectively. Some large towns, however, seem to have an influence on the country for some distance round. This is the case at Antwerp, where the villages lying north of the town have, as a rule, 8 or 9 per cent. of French speakers, and notably at Brussels, where in addition to the suburbs (whose figures are included in those of the town itself) the country for several miles round presents an abnormally high French figure.

The foregoing influences tending to raise the proportion of French speakers apply, it need hardly be said, more strongly as the edge of the Flemish area is approached. The intensely industrial area on the Scheldt and Rupel between Antwerp and Lierre, including large places like Hoboken, Hemixem, Niel, Boom, and Duffel, has only 9 per cent. of French speakers, sinking at Duffel to 5·6 per cent. This area lies about 25–30 miles from the language-frontier. On the other hand, towns lying nearer the language-frontier have a higher French figure even when their size and industrial development is less considerable.

Finally, the proportion of French is highest in the west and lowest in the east. This factor is doubtless connected with the preceding ones; for the east is both more rural than the west and also more removed from the neighbourhood and predominance of French influences. The province of Limbourg, like that of western Flanders, touches the language-frontier on the south, and yet its French speakers form only 14 per cent., instead of nearly 20 per cent. of the population. This difference is due in part to the greater industrial development of Flanders, in part to the natural connexion of Limbourg with Holland, which surrounds it on two sides, while Flanders lies between France and the sea.

Throughout Flemish Belgium the proportion of French speakers seldom, even in the smallest villages, falls below 2 per cent., and hardly ever below 1 per cent. This contrasts strongly with the Flemish-speaking percentage in French Belgium, which in the small rural *communes* very seldom rises above 1 per cent. On the other hand, this French-speaking population is almost all bilingual. The proportion in Flemish Belgium of persons who speak no Flemish hardly anywhere rises to 1 per cent. (excluding, of course, infants who form 3–5 per cent. of the whole). It must be observed that the infiltration of French in the Flemish area shows a slight decrease in recent years. The proportion speaking Flemish only tends to increase, and also that speaking German; while that speaking French and Flemish indifferently decreases.

The Flemish-speaking element in French Belgium.—The preponderance of French to the south of the language-frontier is much more complete than that of Flemish to the north. This is very largely due to such historical facts as the Gallicism of the mediaeval Flemish nobility and the use of French as the official language throughout Belgium in the nineteenth century (cf. pp. 100, 117, 237, 279). Whatever the cause, it is in general true that the transition from the language-frontier to an area of practically pure Flemish is everywhere more gradual than that from the same line to an area of practically pure French. To similar causes is due the encroachment of French on German within the last few centuries, which is very marked in Lorraine and in the extreme south of Belgium. This phenomenon is observed again below, p. 110, note.

The same conditions which govern the distribution of French on one side of the language-line govern those of Flemish on the other. Thus there is least Flemish in the rural districts; the agricultural *communes* of the Hesbaye, within a few miles of the language-line in Nivelles and Waremme *arrondissements*, already show a Flemish percentage of less than 1, often sinking to zero. All over the south of Belgium these low figures are maintained by the rural *communes*. The towns, on the other hand, have almost always a Flemish percentage rising to 2 or 3, often (in the case of the largest towns) rising above 5, and in three or four cases above 10. But even a town like Mons has only 7 per cent. of Flemish speakers, contrasting with the 27 per cent. French figure of Ghent, a Flemish industrial centre about equidistant from the language-frontier.

Secondly, industry attracts a higher percentage of Flemish speakers than agricultural life. Thus the semi-rural districts round Liége, Charleroi, and La Louvière, which cannot be described as urban, but support a dense industrial population, have a Flemish-speaking figure rising above 5 per cent., but not, except in the three towns themselves, above 10 per cent. (Liége 12 per cent., Charleroi 10 per cent., La Louvière 11 per cent.). Considering the intense industrial development of these districts, however, their Flemish figures cannot be considered high.

Thirdly, the preponderance of French is most complete in the west, inversely to that of Flemish, which is complete in the east. This is curiously illustrated by the three great coal-mining districts of Charleroi, the Centre, and the Couchant de Mons. The mining villages of the Charleroi basin have 9 per cent. of Flemish speakers; those of the Centre basin have an average about 6 per cent.; those of the Couchant de Mons are almost exclusively French, and their Flemish figure falls below 1 per cent. In the same way, travelling from Charleroi along the Sambre–Meuse line, the proportion of Flemish shows a general tendency to rise till it reaches its highest at Liége. This rule no longer operates in the hill districts south of the Sambre–Meuse valley; here the Flemish figure is almost always below 1 per cent. in the rural districts and below 3 per cent. in the towns. The only towns with a high Flemish figure are Spa (22 per cent.) and Stavelot (9 per cent.); Arlon (5 per cent.), Bouillon (5 per cent.), and Philippeville (8 per cent.) are the only other towns which exceed 3 per cent. In a few cases a single Flemish family gives a high percentage to a small village, but these make no difference to the general average. The high figure at Spa is due to visitors, not to industry; the neighbouring industrial town of Verviers has only 1·9 per cent.

In general, French is spoken by very nearly all the inhabitants of French Belgium; the Flemish speakers are practically always bilingual.

The German-speaking element in Belgium.—Here we have to deal (*a*) with the areas in the east where German is the predominant language, (*b*) with the infiltration of German in Belgium at large.

(*a*) *The German-speaking areas in Belgium.*—The meeting-point of three language-frontiers falls on Belgian territory, near Hombourg, a village directly between Liége and Aachen. The *arrondissement* of Verviers, in which Hombourg lies, is predominantly French-speaking; but it contains small districts where Flemish and German preponderate. The German-speaking area includes the *communes* of Gemmenich, Hombourg, Moresnet, Montzen, Henri-Chapelle, Welkenraedt, Baelen, and Membach. None of these *communes* can be unequivocally described as German-speaking, since in none does the whole population speak German, whether with or without another language. The nearest approach to this state of things is at Gemmenich, in the extreme north of the area, only about three miles from Aachen. Here 92 per cent. of the population speak German, leaving about 3 per cent. of adults who do not; 67 per cent. speak German only, as against 22 per cent. who speak French and 1·2 per cent. who speak nothing else. Gemmenich, then, might not unfairly be described as a German-speaking *commune*, with a considerable percentage of bilinguals. There is also a little Flemish.

At Moresnet, the next *commune*, the proportion of French is twice as great; 84 per cent. speak German, 48 per cent. German only; 48 per cent. speak French, 2·8 per cent. French only. Here, then, about 10–12 per cent. speak no German. At Hombourg, immediately west of Moresnet, the figures are almost identical; 87 per cent. speak German, 45 per cent. German only; 47 per cent. French, 3 per cent. French only.

Aubel, the next *commune* to the west, lies entirely outside the German area, and only 7 per cent. speak German at all. It is, however, the border-*commune* between the Flemish and French areas, French preponderating.

Montzen, south of Hombourg, resembles it and Moresnet; 89 per cent. speak German, 42 per cent. German only; 53 per cent. French, 6 per cent. French only.

The remaining four *communes* of the group are decidedly less German. At Henri-Chapelle 82 per cent. speak German and 79 per cent. French; and one-third of the population uses French habitually. At Welkenraedt 80 per cent. speak German and 61 per cent. French; German is here again rather more predominant. At Baelen 79 per cent. speak German and 77 per cent. French; the numbers are almost equal, and though most of the bilinguals habitually speak German, one-third, as at Henri-Chapelle, use French.

Finally, in the large, sparsely-populated *commune* of Membach 68 per cent. speak French and 86 per cent. German. Here only 22 per cent. use French habitually.

The eight German *communes* are thus not by any means purely German. Modern German writers have represented their inclusion in Belgium as a piece of 'land-grabbing' in defiance of linguistic divisions; but they are, with the exception of Gemmenich and Moresnet, more than 50 per cent. bilingual or French-speaking only. In all the eight *communes* the bilinguals use German more often than French, and German is the current language; but there is no such exclusive predominance of German as would be implied by claiming that language alone demands their inclusion in Germany.

The second German-speaking area is the *commune* of Beho, immediately adjoining the northern extremity of the Grand Duchy of Luxemburg. This is an extremely small area, about two by four miles, with a population of 1,500; of these 75 per cent. speak German, 30 per cent. German only, 65 per cent. French, and 20 per cent. French only. Here also, then, we have a bilingual *commune* with a slight German preponderance.

The third area is the *arrondissement* of Arlon, with the exception of five *communes* in the south and the addition of a little territory to the north. Arlon has been described as a German town. In fact it is 56 per cent. bilingual, and of the rest the majority speak French; 22 per cent. speak French only, as against 13 per cent. who speak German only. The preponderance is thus decidedly in favour of French, though it is true that the majority of the bilinguals use German more than French. This fact, however, does not warrant the description of Arlon as a German town. In everyday life it is entirely bilingual.

The same characteristic is found, though to a less degree, in the whole *arrondissement* of Arlon. Even the *communes* on its eastern border, where the French element is smallest, have 56 per cent. (Attert), 81 per cent. (Bonnert), and 43 per cent. (Sélange) of French speakers, as against 85, 91, and 80 per cent. German. Here therefore, as well as in Arlon itself, the population is predominantly bilingual, though in these rural *communes* more than in the capital German is the commoner language. The five *communes* of Meix-le-Tige, Rachecourt, Halanzy, Aubange, and Athus in the south and south-east of the district fall on the French side of the line.

To this German-speaking area must be added the *commune* of Tintange and a part of Fauvillers in the *arrondissement* of Bastogne. Here the conditions are very much like those in the rural *communes* of Arlon; 53 per cent. of the inhabitants are bilingual, but use German more than French; 15 per cent. speak French only, and 26 per cent. German only. The part of Fauvillers is only the extreme east of the *commune*, about a quarter of the whole; in the remainder French predominates.

(*b*) *The German-speaking element in the rest of Belgium.*—The distribution of German speakers in Belgium at large is governed by the same main principles which we found operative in the case of the other languages. First, large towns have a higher percentage than smaller towns; secondly, industrial areas than agricultural; thirdly, the proportion is higher in the east, near Germany, than in the west.

In the rural *communes* there is remarkably little German spoken even quite close to the eastern frontier. The *communes* immediately within the language-line have only 10 (rare), 5, 4, or 2 per cent. who speak German as well as their own language. A few isolated cases have a higher figure where the language-frontier does not lie exactly along the *commune* boundary; in others there is a real admixture. This is found chiefly in the south of Arlon, where the five *communes* of Meix-le-Tige, Rachecourt, Halanzy, Aubange, and Athus are really bilingual with a predominance of French, just as their northern and eastern neighbours are bilingual with a predominance of German. But this bilingualism is confined within very narrow limits. Musson, the western neighbour of Halanzy, and like it an industrial *commune* with old-established ironworks, has only 4 per cent. German speakers. At Limbourg, again, a considerable town only a mile or two from the German-speaking Baelen, the whole population speaks French, and 68 per cent. speak nothing else.

Farther west the proportion of German speakers in the rural *communes* quickly dwindles to below 1 per cent., and never again touches that figure. In very small numbers, generally one or two per thousand, they persist with fair uniformity over the whole country, and are absent over considerable areas only in the west.

In the towns of the eastern frontier German is common. In Verviers 10 per cent. of the population speak it; in Spa 45 per cent.; in Stavelot 24 per cent. The smaller towns farther south have smaller figures; Bastogne, within very few miles of the frontier, 4·8 per cent.; Neufchâteau 3·4 per cent.; Virton 4 per cent. Westward these figures shrink rapidly. The country towns of the south have almost always below 1 per cent.; even Dinant has only 0·9 per cent. The great industrial region of the Sambre–Meuse valley has higher figures, diminishing to the westward; Liége 5·5 per cent., Huy 1·6 per cent., Namur 2·2 per cent., Charleroi 0·5 per cent., Mons 0·1 per cent. The towns of the Flemish area do not, as might be expected, show a higher proportion of German speakers than do those of the French. Maeseyck, in the extreme east, has only 2 per cent. ; Hasselt 2·8 per cent., Diest 0·7 per cent., Louvain 0·2 per cent., Malines, Termonde, Ninove, 1 per cent. ; west of this the figures are still smaller, as the French figures increase. At Audenarde the German figure is zero ; at Courtrai 0·5 per cent., at Eecloo 0·2 per cent., at Ypres 1 per cent. These small figures represent, almost without exception, educated persons, knowing as a rule three languages, if not more.

The only large German figures in the west are in the great cosmopolitan towns of Brussels (3·4 per cent.), Antwerp (7 per cent.), and Ostende (2·6 per cent.).

It thus appears on the whole that German is very widespread throughout the country, but in extremely small quantities. Even in large towns a figure of over 1 per cent. is exceptional, and denotes either a town quite close to the German frontier, or one of exceptional education and social development ; industrial development by itself does not raise the percentage so high as this.

General linguistic survey of Belgium by arrondissements.—Beginning at the north-west, and dealing first with the Flemish area, we start with Bruges.

Bruges has 15 per cent. who speak French, 1 per cent. German ; 79 per cent. speak Flemish only (the remaining 4–5 per cent. are infants ; so throughout). The French figure is high owing to the town of Bruges, 27 per cent. French speakers, and to the seaside places of which Blankenberghe (20 per cent. French speakers) is the chief. The whole of the coast-strip has a high figure for French. Otherwise, in the bulk of the *arrondissement*, the figure is under 5 per cent. This indicates an agricultural area ; industrial Flanders to the south and east has over 5 per cent. French speakers. The rather high German figure is also due to Bruges (1·7 per cent.) and the coast-towns.

Ostende has 18 per cent. French, 1·3 per cent. German, 76 per cent. speaking nothing but Flemish. Here the whole area is below 5 per cent. French, except the coastal belt; Ostende, a large town of 42,000 inhabitants, has 29 per cent. of French and 2·6 per cent. of German speakers, which raise the figures abnormally for the whole *arrondissement.*

In Furnes, the coastal *arrondissement* adjoining French territory, 80 per cent. speak Flemish only; 17 per cent. speak French and 0·3 per cent. German. The town of Furnes contains 30 per cent. of French speakers, and the rural *communes,* with very few exceptions, over 10 per cent. French is thus widespread, even among the agricultural population.

Dixmude has 86 per cent. who speak Flemish only; 8·5 per cent. French speakers; 0·1 per cent. German speakers. The capital has 29 per cent. of French speakers—almost the same as Furnes—but the rural population, which has a high French figure (12 per cent.) in the south-west, is almost exclusively Flemish-speaking in the north-east.

In Ypres the conditions resemble those of Furnes; 78 per cent. speak Flemish only, 26 per cent. French, and 0·1 per cent. German. The high French figure is due to the fact that the language-frontier passes through the south of the *arrondissement,* where Ploegsteert, Warneton, and Houthem are predominantly French-speaking. Zandvoorde, in the south, was in 1890 a bilingual *commune* with 31 per cent. who spoke French only; now 91 per cent. speak Flemish only (compare Reckem, *arrondissement* Courtrai). In Ypres town 27 per cent. speak French.

Roulers has 87 per cent. who speak Flemish only, 8 per cent. French speakers, and 0·2 per cent. German speakers. The capital has 13 per cent. French speakers—a small figure considering that it is a town of 25,000, and due to the increasing distance eastward from French Flanders—and the rural population in general between 5 and 10 per cent.

Thielt much resembles Roulers, but all the French figures are slightly lower; 5·5 per cent. in the whole *arrondissement* speak French; in Thielt itself 10 per cent., in the rural *communes* 1 to 5 per cent. in the north and 5·8 per cent. in the centre and south.

In Courtrai we come again to the language-frontier. The southern *communes* are French-speaking (Mouscron, Luigne, Dottignies, Espierres, Helchin), and there is a strong French infiltration in the south and centre of the *arrondissement.* In Courtrai itself 20 per cent. speak French; in the rural *communes* the figure falls to 4 per cent. only in the extreme north. Flemish has encroached since 1890 in the *commune* of Reckem, near Menin. This was then a predominantly French *commune*: it is now predominantly Flemish. Such changes are exceptional. In the whole *arrondissement* 28 per cent. speak French, 67 per cent. Flemish only; 0·22 per cent. speak German.

Passing into Eastern Flanders, Eecloo is the most purely Flemish district in Belgium, with 90 per cent. speaking Flemish only, and no more than 6 per cent. of French speakers. These averages for the whole district are, unusually, also the figures for the capital. In the rural districts the proportion of French speakers varies from 7 per cent. in the west to 2 per cent. in the east.

Ghent has a high French figure (17 per cent.; 78 per cent. Flemish only, 1 per cent. German), owing to the great industrial town of Ghent, where 27 per cent. speak French. The country districts have 2–9 per cent.; the figure is highest in the west and lowest in the east.

Audenarde (71 per cent. Flemish only, 11 per cent. French, 0·06 per cent. German) again touches the language-frontier. Orron, Amongies, and Russeignies are French-speaking *communes* in the extreme south-west; Renaix is a Flemish town with 18 per cent. of French speakers. The infiltration into the rural areas is not very marked except in the south; some *communes* in the north have as few French speakers as 1 or 2 per cent., and Audenarde itself has only 9 per cent.

Alost just touches the language-frontier, which affects the French figures of its southern end. In the rural districts of the north and centre, however, the figure is always below 5 per cent. The chief towns are Alost with 9·7 per cent., Ninove with 15 per cent., and Grammont with 15 per cent. French speakers. In the whole district 87 per cent. speak Flemish only, 8 per cent. French, and 0·3 per cent. German.

Termonde (88 per cent. Flemish only, 6 per cent. French, 0·3 per cent. German) is more industrial than Alost, but this is compensated by its position farther north. In Termonde itself 22 per cent. speak French.

St. Nicolas (88 per cent. Flemish only, 7 per cent. French, 0·3 per cent. German) is much like Termonde. The rural population of the north has 2 to 5 per cent. French speakers, and even St. Nicolas itself only 12 per cent. Here we reach a part of Belgium where the great industrial populations are almost entirely Flemish-speaking, and French is little more spoken in the towns than in the country.

Of the province of Antwerp, the *arrondissement* of the same name (75 per cent. Flemish only, 19 per cent. French, 5 per cent. German) has a high French figure. This is due to the influence of Antwerp itself, a cosmopolitan town with 24 per cent. of French speakers and

7 per cent. of German. Otherwise the French figure is not high; the great industrial centres of Hoboken, Hemixem, Boom, &c., with engineering and shipbuilding works, brickworks, &c., have only about 9 per cent., and the rural *communes*, except for a certain sphere of influence round Antwerp itself, seldom have over 5 per cent. The German figure for the *arrondissement* is also noteworthy, and is likewise due to Antwerp.

In Malines also (84 per cent. Flemish only, 11 per cent. French, 0·5 per cent. German) the French element is chiefly contributed by the capital with 21 per cent. French speakers. The industrial towns along the Rupel have 5–13 per cent., highest at Lierre; the rural *communes* 2–4 per cent.

Turnhout (88 per cent. Flemish only, French 6 per cent., German 0·3 per cent.) lies in the agricultural Campine district, little touched by foreign influences. The only considerable centres, Turnhout, Herenthals, and Moll, have 10, 11, and 9 per cent. French speakers; the rest between 2 and 5 per cent.

Of the province of Brabant, the *arrondissements* of Brussels and Louvain fall within the Flemish area. Brussels (38·5 per cent. Flemish only, 57 per cent. French, 3·3 per cent. German) is the most polyglot of all the *arrondissements*, even Arlon not excepted. The capital is often described as a French-speaking town. This is not strictly correct; 66·3 per cent. of its inhabitants speak Flemish, 73·8 per cent. French, and 3·4 per cent. German; the fact that these figures add up to 143·5 instead of 100 show how strong is the bilingual element. Now of these bilinguals, amounting in all to 40 per cent. of the population, three-fifths speak Flemish habitually and only use French in case of necessity. It follows that of the total population exactly 50 per cent. habitually speaks French and 50 per cent. habitually Flemish. In this computation the *commune* of Brussels is taken in connexion with thirteen other *communes* contiguous with it and constituting its inner ring of suburbs. The percentage of French in the *commune* of Brussels is no higher than in these adjacent *communes.* Outside this ring the French figure declines, though slowly. Brussels is one of the very few towns whose linguistic influence is widely felt in the surrounding country; 25–50 per cent. French speakers are found in several *communes* south and south-east of the town, and in any direction it is necessary to travel some miles before coming to a lower figure than 10 per cent. Only on the fringe of the *arrondissement,* in the north and west, have the rural *communes* less than 8 per cent. of French speakers. In the south the French figure is raised by the presence of the language-frontier, which on the east almost corresponds with the boundary of the *arrondissement*; two French-speaking *communes,* Saintes and Bierghes, fall within it.

Louvain (78 per cent. Flemish only, 17 per cent. French, 0·7 per cent. German) also lies adjacent to the language-frontier, the effect of which is considerable in the west, but decreases to the east. In the meridian of Tirlemont the rural *communes* are almost exclusively Flemish-speaking within five or six miles of the language-line. Four *communes,* Bas-Heylissem, Haut-Heylissem, Zétrud-Lumay, and L'Écluse, lie across the line and are French-speaking. Of the urban *communes* Louvain has a fairly high French figure (38 per cent.) and Tirlemont 36 per cent. The towns of the north, Aerschot and Diest, have 11 and 15 per cent.

The whole of Limbourg province is strongly Flemish; except close to the language-line in the south the French-speaking element is practically confined to places with over 3,000 inhabitants, like Overpelt (14 per cent.) with its factories, Maeseyck (15 per cent.), Genck (9·2 per cent.), Hasselt (22 per cent.), St. Trond (21 per cent.), and Tongres (30 per cent.). The rural *communes* in Tongres and the south of Hasselt have about 12, 10, and 8 per cent. ; this figure rapidly drops to 5, 4, and 2, percentages which remain fairly constant throughout northern Hasselt and Maeseyck *arrondissements.* German (Maeseyck *arrondissement* 0·8 per cent., Hasselt 0·8 per cent., Tongres 0·6 per cent.) is very low, considering the proximity of the German frontier, and even in the towns hardly ever reaches 2 per cent.

The southern or French-speaking region of Belgium is far more homogeneous and constant in language.

Tournai (in Hainaut, 92 per cent. French only, 5 per cent. Flemish, 0·4 per cent. German) adjoins but does not cross the language-frontier on the north. In the capital the Flemish figure is 7·7 per cent. ; otherwise, except in some *communes* in the extreme north, it hardly reaches 5 per cent. anywhere.

In Ath (90 per cent. French only, 6·7 per cent. Flemish, 0·2 per cent. German) one northern *commune* lies across the language-line, and in the capital 6 per cent. speak Flemish ; otherwise the Flemish figure is negligible.

Soignies (83 per cent. French only, 12 per cent. Flemish, 0·2 per cent. German) has five Flemish *communes* in the north, and Enghien, its northernmost town, is 59 per cent. bilingual. In the south it includes a portion of the Centre coalfield and industrial area, where the *communes* have a Flemish figure rising at La Louvière to 11·7 per cent. Otherwise the *arrondissement* is practically unmixed French.

Mons (93 per cent. French only, 1·4 per cent. Flemish, 0·3 per cent. German) is far enough from the language-frontier to draw its industrial population from French-speaking sources only. Apart from the capital, whose Flemish figure is 7 per cent., the Flemish is practically nil. It may also be observed that no industrial area has so low a German figure.

In Charleroi (90 per cent. French only, 6·7 per cent. Flemish, 0·4 per cent. German) the high Flemish figure is entirely due to the coal-mining and industrial area known as the 'Bassin de Charleroi', and extending from Monceau-sur-Sambre on the west to Châtelet on the east. Here the Flemish figure is 9 per cent.; elsewhere it is hardly anywhere above 2 per cent.

Thuin (94 per cent. French only, 2·4 per cent. Flemish, 0·3 per cent. German) owes its Flemish figure to the small portion of the 'Bassin du Centre' lying at its northern end. Apart from this the Flemish figure rises in the larger towns to about 1·5 per cent., the country being almost pure French.

Nivelles (Brabant, 91 per cent. French only, 5 per cent. Flemish, 0·4 per cent. German) is a chiefly rural *arrondissement* adjoining the language-frontier. Apart from the *communes* of its extreme north, the Flemish figure is only about 2 or 3 per cent. in the towns, sinking to zero in many of the agricultural Brabançon villages.

The whole province of Namur is almost exclusively French. In the *arrondissement* of Namur (94 per cent. French only, 2 per cent. Flemish, 0·6 per cent. German) the capital has 5·1 per cent. and Tamines 5 per cent. of Flemish speakers; otherwise the large places have about 1 or 2 per cent., and the small *communes* under 1 per cent. of Flemish speakers. The capital has 2·2 per cent. German.

In Dinant (95 per cent. French only, 1 per cent. Flemish, 0·5 per cent. German) and Philippeville (95 per cent. French only, 1·5 per cent. Flemish, 0·3 per cent. German) the German and Flemish figures are both extremely low. Flemish is fairly constant, even in small places, but generally below 1 per cent.; even in Dinant it only reaches 1·8 per cent. There is more Flemish and less German than in the similar, chiefly forest and agricultural, districts of Luxembourg province.

The province of Liége is more mixed than any other. On the south-west it is very pure French (*arrondissement* Huy, French only, 95 per cent., Flemish 1·5 per cent., German 0·6 per cent.; very little Flemish and German indeed except in the industrial centres of the Meuse valley); on the north the language-frontier brings in a certain amount of Flemish (*arrondissement* Waremme, 78 per cent. French only, 18 per cent. Flemish, chiefly accounted for by the half-dozen Flemish *communes* in the extreme north-west, 0·3 per cent. German), and in the east Verviers contains large quantities both of Flemish and German. The *arrondissement* of Liége (85 per cent. French only, 11 per cent. Flemish, 2·7 per cent. German) owes its Flemish figure partly to the language-frontier on its northern boundary, partly to the Flemish element in the industrial population (Liége 12 per cent., Seraing 5·5 per cent.); the rural *communes*, except near the language-frontier, have practically none. The German figure is also due to the large towns (Liége 5·5 per cent., Seraing 3·3 per cent.), but small German elements exist, even in the country districts, east of Liége itself.

The agricultural villages of the Hesbaye, in Liége, Huy, and Waremme, are very free from Flemish admixture as soon as the language-frontier is left behind. The *arrondissement* of Verviers (78 per cent. French only, 13 per cent. Flemish, 14 per cent. German) owes its Flemish figure to a few *communes*, Fouron St. Pierre, Fouron St. Martin, Teuven, Remersdael, and to a less degree Aubel, where that language predominates; these *communes* form a little triangle projecting into Belgium from Dutch territory across the frontier midway between Aachen and Visé. Elsewhere the Flemish infiltration is very slight, being only 1·9 per cent. even at Limbourg; Spa with 22 per cent. and Stavelot with 9 per cent. are quite exceptional. The German figure is due in the same way to a group of German-speaking *communes*, Gemmenich, Moresnet, Hombourg, Montzen, Henri-Chapelle, Welkenraedt, Baden, and Membach, lying between Aachen and Limbourg. There is also a considerable German infiltration in the large towns (Verviers 10 per cent., Spa 45 per cent., Stavelot 24 per cent.). In the south Flemish practically disappears; but German persists at about 1–2 per cent. even in the country parts.

The province of Luxembourg is almost exclusively French except for its eastern fringe, including especially the strongly German *arrondissement* of Arlon. Marche (93 per cent. French only, 0·4 per cent. Flemish, 0·5 per cent. German) and Neufchâteau (94 per cent. French only, 0·9 per cent. Flemish, 0·9 per cent. German) are the purest French districts in Belgium. German only rises to 1–3 per cent. in their towns, which are few and small; Flemish never passes 2 per cent. except at Bouillon on the Semois, where it reaches 5 per cent. Bastogne (87 per cent. French only, 6 per cent. German, 0·6 per cent. Flemish) contains German-speaking elements in almost every *commune*, rising in the east to 10 per cent. in places, ignoring the *communes* of Beho and Tintange, where it predominates. Virton (93 per cent. French only, 0·5 per cent. Flemish, 2 per cent. German) has 4–9 per cent. German speakers in its eastern *communes*, but very few elsewhere. Finally, Arlon (69 per cent. French, 19 per cent. French only; 77 per cent. German, 26 per cent. German only; 2 per cent. Flemish) is a bilingual *arrondissement* which has already been sufficiently described (pp. 87–8).

History of the Franco-Flemish language-frontier.—When the Franks in the sixth century A. D. settled among the Romanized Belgae, they imposed their own Teutonic language over Flanders and northern Brabant down to a line determined apparently in part by the strongly fortified Roman road from Bavai to Cologne, and partly by the great forest known as the *Silva Carbonaria*, which stretched northwards from the Sambre–Meuse valley in a continuous mass till the thirteenth century. This kept the bulk of the Franks north of a line joining the upper Lys to the Meuse near Visé. Later, especially under Clovis, they penetrated south into the Tournaisis, Artois, and Cambrésis; but never in such numbers as to impose their language on the bulk of the population.

In the Middle Ages Latin was the business language throughout the Netherlands; French and Flemish were secondary, and their users were unconscious of linguistic patriotism. Walloons and Flemings spoke each other's languages freely, and in this interchange French gradually gained the upper hand, even in Flanders, so that when Latin fell out of use in the thirteenth century French took its place. The nobility were especially influenced in favour of French by the facts that the counts of Flanders and Artois were vassals of the French crown, and sometimes even French princes; the court therefore naturally became Gallicized.

During the fourteenth century, however, popular movements began to bring Flemish, always the language of the people, into prominence. Gradually, especially during the struggles with Burgundy in the fourteenth and fifteenth centuries, the feeling grew up that French stood for tyranny and foreign domination, and Flemish became the rallying-point of national consciousness. Under Philip the Bold it gained an official status, and began to reconquer a part of its original area lost to French. Ypres was thus regained, and the language-line pushed almost to the Lys.

From this time on, no government, even the Spanish, administered Flanders in any language but Flemish. The first retrograde step was taken by the French revolutionary government, which in the year III proclaimed French as the sole official language. This was maintained later by the Dutch Government, which was supported by the Flemish *bourgeoisie*; but the 'mouvement flamand' continued, with the results described in Chap. VI below.

In French Flanders (see below), in the absence of this concession, Flemish has lost ground year by year. In the sixteenth century, as in the time of Clovis, the linguistic boundary coincided with the Lys; since then French has advanced across the river and filtered freely into French Flanders and even into Belgian Flanders (see notes on the *arrondissements* of Furnes and Ypres), where it has conquered a few villages, Ploegsteert, Comines, Reckhem, Zandvoorde, Warneton, and Houthem. Since 1890, however, the movement has been reversed; Zandvoorde, Reckhem, and Houthem have been reconquered by Flemish.

DISTRIBUTION OF LANGUAGES IN THE ADJACENT TERRITORIES

The three most important facts to be considered here are the Flemish area in France and the Walloon (Malmédy) and French (Lorraine) areas in Germany. These are briefly treated below.

French Flanders.—The original Germanic invasion of Belgium penetrated westwards along the coast as far as Boulogne, and established a Teutonic language not only in Flanders, but all over the country north of a line joining Boulogne and Lille. These two towns themselves were never Teutonized, but they constituted the northern outposts of the French language in the earlier Middle Ages. Judging by the evidence of place-names, isolated Teutons penetrated south of the Boulogne–Lille line as far as the river Canche and the Artois, but these were soon swamped by the French population among which they settled.

The French language soon began to reconquer the Boulonnais ; all through the Middle Ages the language-frontier was being pushed northward and north-eastward, and to-day it runs from the sea near Dunkirk to St. Omer and Aire, and thence to the Belgian frontier near Bailleul. The district north and east of this line is still Flemish-speaking, though a very considerable proportion of the population—perhaps 25 per cent.—speak French either exclusively or as well as Flemish. It does not, indeed, appear that the position of the Flemish language here is very strong. The Flemings of Belgium have shown such vigour and tenacity in the defence of their language (see Chapter VI) that their kinsmen in France might have been expected at least to follow their example, and a Flemish movement has in fact been set on foot in French Flanders. But French policy does not as a rule admit that any other language should have equal rights with French, and the suspicion of Pan-Germanism, which attaches not without cause to the Belgian Flemish movement, must militate against the success of the parallel movement in France. In short, most observers consider that the use of Flemish in France is doomed to die out, and that the efforts of educated Flemings to revive and defend their language may arrest but cannot prevent its decay.

The Walloon district of Malmédy.—German authorities complain that a tendency exists, manifested in German as well as in foreign writers, to confer a non-German colouring upon the frontier towns and districts of the Aachen *Regierungsbezirk.* Thus Montjoie is a purely German town, but its name has given rise to a false view that it is French, whereas the name arose in the Middle Ages on account of the Gallicizing fashions of the German nobility, which went so far as to give French names to places as far afield as the Rhine. Eupen and St. Vith are sometimes described as Walloon towns, whereas St. Vith is practically pure German, and German predominates at Eupen, where, however, there is a very decided Walloon element.

On the other hand, Malmédy has a flourishing and old-established Walloon *bourgeoisie,* far in excess of the German elements which have filtered in since 1815. Malmédy itself is simply a Walloon town, containing a few officials and others who speak German. The rural *Gemeinden* in the immediate neighbourhood are also purely Walloon. Detailed statistics of the population of these villages are not available, but it is possible to arrive from the available data at an estimate whose margin of possible error is very small, and according to which 94 per cent. of the inhabitants of Malmédy and the surrounding villages speak Walloon or French, and 91 per cent. speak no German. The method by which this estimate is reached is given in the foot-note.[1]

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[1] According to the *Statistik d. deutschen Reichs,* vol. 150 (map), 28·7 per cent. of the population of the *Kreis* Malmédy are Walloon-speaking. This appears an inconsiderable percentage, and the German statistics enter no further into detail. Other sources, however, show that the Walloon dialect is not spread over the *Kreis,* but confined to an area 23·7 per cent. of the whole, and containing Malmédy, the *Kreisstadt,* a town of 4,575 inhabitants. What proportion of the total *Kreis* population is contained in the

German writers make no attempt to justify the inclusion of Malmédy in Prussia, and indeed there appears to be no argument in favour of it. In the converse cases of Arlon and the German-speaking *communes* near Limbourg the German preponderance is slight; over 40 per cent. in both cases speak another language. But here the use of the Romance languages is universal, and the lingusitic frontier clearly and decisively marked.

The French-speaking district of German Lorraine.—We shall not treat this area in detail, and are in any case only concerned with the northern extremity of it. From about Messancy, near Arlon, the language-frontier runs south-eastwards, touching Esch-sur-Alzette in Luxemburg and almost reaching Kanfen on the German frontier. Thence it proceeds somewhat irregularly in much the same direction, to cross the Moselle at Uckingen midway between the mouths of

Walloon area it is impossible, in the absence of published German statistics concerning the population of individual *Gemeinden*, to state exactly, but the area in question is much more thickly populated than the rest of the *Kreis*, and probably contains more like one-third than one-quarter of its population of 31,402.

The 28·7 per cent. of Walloon-speaking German subjects in the *Kreis* are the 9,134 persons who speak Walloon only. There are also 84 persons who speak French only. The Walloon and French-speaking population is thus a trifle over 29 per cent. Moreover, 305 are given as speaking French or Walloon as *Muttersprache* in addition to German; that is to say, persons naturally bilingual. These raise the percentage of Romance-speaking persons to 30 per cent.

It is possible that not all these are situated within the Romance area. Perhaps 300 Romance-speaking persons might live in German-speaking *communes*: the number could hardly be larger. This leaves 9,140 in the Romance area, whose total population is perhaps 10,000 in round numbers. From the latter figure the military population of about 250 must be deducted, when it will appear that about 94 per cent. of the population of this area are Romance-speaking, and about 91 per cent. speak no German at all.

the Fensch and Orne. It then runs almost east for ten miles, after which it turns south-east once more, and runs up the valley of the German Nied.

South and west of this line French is the language of the people. It has been considerably diluted by German official and military elements in Metz, but Metz is nevertheless still, as it always has been, a French town. In the iron-mining district on the left bank of the Meuse, where the population was almost entirely agricultural before the annexation, a very large non-French element has been imported for the work of the mines; this element is largely Italian. Apart from these influences, the country is still purely French in language and life.

CHAPTER IV

HISTORY

INTRODUCTION

THE country between the Lower Rhine on the east and north and the sea on the west has for centuries been of peculiar importance in European affairs. The attraction of its strategical, commercial, and industrial possibilities, its political incoherence, and the diversity of its populations have caused infinite trouble to it and its neighbours.

Since the early days of the French monarchy, France has suffered from the insecurity of her northern and north-eastern borders. Reacting against the constant danger of invasion, she has laboured to improve her frontier and to establish herself in better positions for attack or defence. In the past, the ideal goal of her effort has been the Rhine. French imagination has been stimulated by memories of Roman Gaul, or by the formula of ‘ the natural limits ’, yet the essential driving force has been the hope to find security—security from invasion and for the exercise of French influence in Europe. But this movement, owing to the conditions imposed on it by the European situation, by the military and enterprising temper of the French nation, or by the character of individuals, has taken forms which have made it appear extremely menacing to governments and peoples beyond the Rhine and the Channel. And when France had reached the Lower Rhine at last, it did not give her security.

Since the twelfth century England has had an interest in the Southern Low Countries. During the

Middle Ages it was a point of English policy to look in that direction for allies against the French monarchy. The mediaeval period of England's foreign policy—the period of wars for territory in France—was brought to a close in the sixteenth century, and there began the modern period of her wars of defence, commerce, and colonial expansion. England had now to think of the Southern Netherlands as a base from which a continental Power might threaten her safety or her trade. From here in the sixteenth century the great military power of Spain menaced both England and France; in the seventeenth, when Spain had fallen into weakness, Great Britain and Holland fought to make the Belgian provinces a barrier against a French advance towards the mouths of the Scheldt and the Rhine. Since then it has been a principle—upheld in the struggle with revolutionary and imperial France as in the present war—that Great Britain should not allow Belgium to fall under the control of any Power likely to use it to the detriment of British interests.

'The Holy Roman Empire of the German nation' once included within its bounds all the country between the Lower Rhine and the Scheldt, as well as Lorraine. But it failed to make good its government here, and at the expense of its ancient claims France moved Rhinewards. In this advance French policy and warfare came to extend their operations to Germany east of the Rhine, and at last provoked there a violent national reaction.

Modern Germany has returned in a counter-offensive against France, and not untouched by memories of the Mediaeval Empire has hoped to find in Lorraine and Belgium a position from which she might securely dominate her traditional enemy. And now her political and commercial ambitions in the world beyond the limits of Europe, and her consequent antagonism towards Great Britain, have aroused in her the desire for the possession or control of Antwerp and of the coast-line towards the Straits of Dover.

The problems which this region now presents have their origins in the history of the country during the first thirteen centuries of our era. A very brief account of these origins will be given below. Belgium, the Grand Duchy of Luxemburg, and the Rhine Province will then be dealt with separately. The history of each area will be sketched so far as may be needed to explain its position in European affairs. The formation of the boundaries of Belgium and Luxemburg will also be described in the present volume. The history of Lorraine and of the boundary between Lorraine and the Rhine Province will be given in the *Manual of Alsace-Lorraine.*

Early History of the whole Area

First Century B. C.—Thirteenth Century A. D.

(Origins of the Language-Frontier, and of the condition of the Country as Debatable Land)

The country was conquered for Rome by Julius Caesar in the years 57–50 B. C. It was then the northern part of Gaul, and was inhabited mainly by Celtic tribes collectively known as Belgae, but the Germans from across the Rhine had already begun to push their way in.

This German invasion was stopped, and then for long held in check, by the Roman Empire. The Imperial Government, after an unsuccessful attempt to advance to the Elbe, strongly organized the defence of the Lower Rhine, maintained a protectorate over the Germans in the country which is now Holland, and tried, chiefly by diplomatic means, to keep the other tribes living near the frontier under some measure of control.

On the lands within the Rhine frontier the full Roman provincial administration was imposed. Civilization followed the Roman conquest. Among other results, the Latin language, in the form of a Gallo-Roman dialect, became more and more widely used, spreading outwards from the towns; its advance in the rural districts was probably assisted by the coming of Christianity in the second, third, and fourth centuries.

Of the Roman tradition the French have claimed to be the heirs, and that the Roman Empire made the Rhine its frontier has had great influence on French political ideals.

In the course of the third century the German peril once more became serious, and gradually, between 350 and 450, the Imperial Government lost its hold on the Rhine. The Franks, a large association of German tribes from beyond the Lower Rhine, slowly made their way into Northern Gaul; sea-raiders, Saxons and Frisians, settled along the coast of Flanders and round Boulogne. Eventually a Frankish chief, Clovis (481–511), united under his rule all the Frankish tribes, and he and his successors conquered almost the whole of the Gallic lands (486–535).

In the movements of the invading Germans during the fourth and fifth centuries are to be found the origins of that linguistic frontier between Teutonic and Romance which at the present day is drawn across Belgium and Eastern Lorraine.[1] This language-boundary seems to mark a difference between the earlier and later stages of the invasion. In Flanders and the Boulonnais, in the plains north of the *Silva Carbonaria* (the great forest which then stretched from the valley of the Meuse between Namur and Liége to the banks of the Scheldt), in the country between the Rhine and the Ardennes, and up the valley of the Moselle as far as the neighbourhood of Metz, the Germans settled in force. But the later Frankish conquests were not followed by any migration *en masse*. An advance about the year 431 to Tournai, Arras and Cambrai, and the great forward movement under Clovis, introduced a Frankish element into the population of North-Central Gaul, and largely Germanized its social, legal, and political customs, but left the great mass of the inhabitants Gallo-Roman by descent and speech. Hence the division of our area between French and German, Walloon and Flemish.

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[1] In the Middle Ages (say about the twelfth century) the linguistic frontier ran from Boulogne eastwards, in a fairly straight line, to a point on the Meuse between Visé and Maestricht, thence south-east to the neighbourhood of Malmédy, from there south by west to the Arlon district, and thence, in a general south-easterly direction, across the episcopal territory of Metz and Eastern Lorraine, to the Alsatian border near Mont Donon. Since the twelfth

In the seventh century the house of Clovis (the so-called Merovingian dynasty) was losing authority throughout its territories, and the great landowners were usurping more and more of the rights of government. But a family of East Frank nobles from the valley of the Meuse near Liége (afterwards known as the Carolingian dynasty) took the power of the Crown into its hands, restored order, and advanced the frontiers of the kingdom. Finally, in 754, one of this family, Pepin, seized the throne itself. His son Charles the Great (Charlemagne) claimed to revive the Roman imperial power in Western Europe; he was crowned

century the only considerable changes in this line have been at its eastern and western ends: (i) French has driven out Flemish from the triangle Boulogne—Dunkirk—St. Omer; (ii) in Lorraine, German, after gaining some ground between the twelfth and sixteenth centuries, subsequently retreated before French, which made a specially notable advance in the country between Château-Salins and Saarburg.

Emperor at Rome in A. D. 800. The territories ruled by Charles in the last years of his life included not only the ancient Gaul within the Rhine, but all the country between Rhine and Elbe, Suabia and Bavaria, the lands along the Middle Danube, and Northern and Central Italy. His favourite residences were in the Meuse valley and the Rhineland; here was the heart of the Empire, and in the early years of the ninth century this region enjoyed considerable prosperity.

But in the course of the ninth century the Carolingian Empire broke up amid civil war, anarchy, and violently destructive barbarian invasions. The manner of its dissolution did much to make our area the debatable land which it still is.

The Carolingian territories were by custom partitioned among members of the ruling house. In A. D. 843 three Carolingian brothers concluded a civil war by the Treaty of Verdun, in which it was agreed that the eldest, the Emperor Lothair, should have under his immediate rule a long strip of territory reaching from the mouth of the Rhine and the Frisian coast to the neighbourhood of Rome, and including in its northern part the lands between Rhine and Scheldt, as well as modern Lorraine. The German lands east of this 'Middle Kingdom' went to the second brother Lewis, while the younger, Charles, took the western third of the Empire, including the lands between the Scheldt and the sea.

Lothair died in A. D. 855. His son Lothair II received only the northern part of his father's kingdom, from the North Sea to the Jura. From him this territory derived the name of Lotharingia, of which the modern forms, much restricted in their application, are Lorraine and Lothringen. Lothair II died without heirs in A. D. 869, and Lotharingia was long in dispute between the rulers of the western and eastern kingdoms

—France and Germany. In A.D. 925 it was finally attached to the kingdom of Germany, though the claim of the French Crown was still put forward from time to time.

In A.D. 962 Otto I, King of Germany, was crowned Roman Emperor, and thenceforth the German kingship was combined with the imperial authority. Thus almost the whole of our area, with the exception of Flanders west of the Scheldt, became part of the Holy Roman Empire of the German nation. The County of Flanders was a fief held of the kings of France, who were also the overlords of the episcopal territory of Tournai; but higher up the Scheldt, south of Tournai, the lands of the Bishop of Cambrai were held of the Emperor. The frontier between France and the Empire reached the Meuse at Fumay, and then turned south. On the French side of this frontier were Teutonic-speaking Flemings, while a Romance-speaking population occupied a broad belt of imperial territory from the upper Scheldt to the lands on the middle and upper Meuse and the upper Moselle. This was quite natural; the languages then embodied no separate political traditions or aspirations.

But neither the mediaeval French monarchy nor the new Roman Empire founded by Otto could incorporate its share of the country in a permanently strong State. The disruption of the Carolingian Empire had left both these Powers weak in organization and the means of government, and had given rise to a feudal law and social custom which on the whole told heavily against them. The difference between them was that while the French monarchy, after a period of extreme weakness, gradually gathered strength, the Empire sank from a rather clumsy vigour towards constitutional paralysis.

In the tenth and eleventh centuries the kings of

France were unable to keep their greater vassals in control. Thus the Counts of Flanders were left to build up a strong and compact principality; till the end of the twelfth century they were completely masters in their own house, and made peace and war at their pleasure, though they continued to acknowledge their allegiance to the French Crown. Meanwhile the commerce of Flanders was creating here populous and wealthy cities with an active political life, able to make an effective resistance when, in the thirteenth century, the French monarchy had grown powerful enough to try to absorb their country.

In Lower Lotharingia, from the Scheldt to the Ardennes, the Emperors of the tenth and eleventh centuries, stronger than the contemporary French kings, made efforts to uphold their authority, and for a time had some partial success. But no adequate machinery of government was organized, and the personal energies of the Emperors were distracted by their interests elsewhere. The result was that by the middle of the twelfth century the sovereignty of the Emperor in the Imperial Netherlands was reduced to a quite ineffectual overlordship. There grew up in this region a number of States whose economic interests, culture, and policy connected them more with each other, with Flanders or with France, than with the Empire of which they were nominally a part.

A similar process took place in Upper Lotharingia (Lorraine). The population here was largely French-speaking, and was much open to French influences. After the eleventh century the Duke of Lorraine took less and less part in imperial affairs, and became absorbed in the local politics of the borderland. The Emperors lost control of the country, so that in the sixteenth century a Duke of Lorraine could claim that he was not subject to imperial charges or jurisdiction.

The lands on the left bank of the Rhine southwards from Cleves had a somewhat different development; for though they broke up into a number of ecclesiastical States, free cities, and lordships great and small, over which by the end of the thirteenth century the Emperors had little authority, they did not fall apart from the life of the Empire in the same way as the Netherlands and Lorraine.

THE SOUTHERN NETHERLANDS (BELGIUM)[1]

1. The Small Feudal States in the Thirteenth and Fourteenth Centuries

a. Internal History

The origin of the small mediaeval States of the Southern Netherlands has been already described. By the fourteenth century the principal of these were the County of Flanders, the Duchy of Brabant, the County of Hainault, and the episcopal state of Liége.

Commerce and industry flourished, especially in Flanders. The Southern Netherlands were able to profit by their position between England, France, and the northern continental lands, by their seaboard and inland waterways, and by their chief industry, the manufacture of cloth. In the thirteenth century Flanders became the principal mart and manufacturing area of North-Western Europe. Its cloth industry was dependent on English wool.

The rise of many towns accompanied this economic progress. Their citizens by purchase or pressure extracted from their lords various privileges and exemptions, and some rights of self-government. The administration of the cities fell into the hands of urban oligarchies, but the traders and artisans who were outside the governing class were not easily held in subjection, and there was much social unrest, breaking out at times in violent insurrections. By far the greatest number, and the most populous, of the chartered towns were in the County of Flanders; and here Ghent, Bruges, and Ypres attained extraordinary political importance.

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[1] Details regarding the formation of frontiers are given on pp. 169–80.

In this period, and especially in the fourteenth century, are to be traced the origins of Belgian constitutionalism, which has had a practically continuous life since the Middle Ages. In the Netherlands, as elsewhere in Mediaeval Europe, government depended largely on negotiation with the predominant interests in the community. These predominant interests were generally those of the *noblesse* (the privileged landowners), the clergy, and the citizens of the towns. Thus grew up the assemblies, called Estates, representing these three classes. These bodies, as Provincial Estates, existed down to the French Revolution. The constitutional development of Flanders was peculiar, for here the cities of Ghent, Bruges, and Ypres were of such overwhelming importance that they came to be considered as representing the whole country. The Estates of Brabant obtained from their rulers a number of political charters, of which the most famous is the ‘ Joyous Entry ’, by which Wenceslas of Luxemburg purchased his recognition as duke in 1356. As late as 1789 the Joyous Entry provided the Brabançon revolt against Joseph II with a legal pretext and a rallying cry.

b. *Relations with France, England, and the Empire*

In the thirteenth century the French monarchy was a rising power, and in reacting against the menace of feudalism it had acquired a tradition of gradual centralization and expansion. It had experience of the danger which threatened it on its northern frontier. For instance, in 1214 it had to face a dangerous combination formed against it by England, and including Flanders, Brabant, and the Emperor. This league was broken by the victory of Philip Augustus at Bouvines. The monarchy now set itself the task of absorbing Flanders and extending its influence over the imperial Netherlands. In this it was to some extent indirectly aided by the predominance of French culture in the southern States; even in the Teutonic districts the French language was commonly spoken by the upper classes. On the other hand, there was no wish to see local institutions replaced by the centralizing administration of the French kings.

During this century it was to France rather than to the Empire that the imperial States looked for arbitration or intervention in their disputes. But French policy was chiefly directed towards Flanders, of all the Low Country States the one with which the monarchy had the closest connexion, and from which it had most to fear. Philip Augustus detached the Artois from Flanders (see p. 170), and after Bouvines the Counts were kept in close dependence on the monarchy. Towards the end of the century the social unrest in the Flemish cities produced complicated quarrels between the Count, the urban oligarchies, and the unprivileged masses. Philip IV intervened and declared Flanders annexed. But he took the side of the urban oligarchies, and this made the masses in the towns strongly anti-French. A rebellion broke out, and a complete victory of the Flemish citizens over a French army at Courtrai (1302) saved the independence of Flanders north of the Lys. The monarchy did indeed acquire the Walloon districts of the county south of that river, but this gain was not destined to be permanent.

From the twelfth century English policy had sought to threaten France through the Netherlands. The league formed by John and broken at Bouvines has been already mentioned. Edward I tried to assist Flanders against Philip IV, but troubles at home obliged him to withdraw from the alliance. At the beginning of the Hundred Years' War (1336–7)

Edward III created a great combination against France, including the Flemish cities, Brabant, Hainault, Gelders, and the Emperor. But this alliance was ineffective. The Emperor and the imperial States had no permanent interest in the conflict, and one after another withdrew from it. The Flemings had joined England (expelling their Francophil count) under pressure of an embargo placed by the English Government on the export of wool. Their natural inclination, in a quarrel between England and France, was towards neutrality; there was little desire to engage deeply in the war or to submit to a permanent political connexion with England, such as their Anglophil leader, Jacob van Artevelde, desired. In 1349 Louis de Mâle, son of the count expelled in 1337, was able to return to Flanders and there carried out a policy of keeping, so far as possible, on good terms with both Powers. The capture of Calais by England in 1347, by giving her a door of her own into Northern France, had made it less important to her that Flanders should participate in the war.

In the thirteenth and fourteenth centuries the Empire was much weakened by civil war and was undergoing a gradual process of disintegration. The Emperors on the whole counted for little in the affairs of the Netherlands. They might be induced by England to join with Low Country principalities in leagues against France; but these alliances came to nothing. Yet there remained the possibility that an imperial dynasty, by the arrangement of judicious marriages and by the appropriation of vacant imperial fiefs, might build up a considerable territorial power in the Netherlands. In the fourteenth century efforts to realize this possibility were made, but had no permanent results.

2. The Burgundian Period and the Unification of the Netherlands (1363–1477)

a. Internal History

In the second half of the fourteenth century most of the old Netherland dynasties died out. The settlement of the question who was to profit by their disappearance depended chiefly on marriage-making and the accidents of birth and death. The inhabitants of each State were generally ready to accept any claimant who could show a reasonably good title, on condition that he would promise to respect established institutions and liberties.

Two families which at different times in the fourteenth century were represented on the imperial throne—the Wittelsbachs of Bavaria and the House of Luxemburg—were in the field before the House of Burgundy. One acquired Holland and Hainault, the other Brabant and Limburg, but both were checked in their progress by the accidents of succession and the distraction of other interests in various parts of a disturbed and divided Empire.

The House of Burgundy was a branch of the royal House of France. Its fortunes were founded by Philip the Bold, fourth son of that King John of France who fought at Poitiers. Between 1363 and 1385 Philip the Bold acquired by enfeofment or marriage the two Burgundies (a French duchy and an Imperial county) on the eastern frontier of France, and in the north the counties of Flanders and Artois, together with the Walloon districts which had been taken from Flanders by Philip IV. The succeeding Dukes of Burgundy, John the Fearless (1404–19) and Philip the Good (1419–67), by marriage, diplomacy, and good fortune added one State after another to their possessions. By the middle of the fifteenth century the whole of the Southern Netherlands was Burgundian except the episcopal state of Liége and the smaller ecclesiastical territories of Stavelot, Tournai, and Cambrai.[1] Moreover in 1435 Duke Philip the Good received in pledge from Charles VII of France the counties of Boulogne and Ponthieu and a large part of Picardy.

The local institutions of the various States under Burgundian rule continued for the most part to exist, but their range of action was diminished by the central government, which was gradually elaborated by the Dukes. From 1463 onwards Estates General representing the whole of the Burgundian dominions were summoned from time to time, though the grants of taxation made by that body had to be confirmed by the Provincial Estates. The Dukes organized a number of executive councils, through which the administration of justice and finance became more and more centralized. The Burgundian Government was assisting the growth of Belgian nationalism, but at the time its work was unpopular. The Netherlanders disliked the encroachments of the central government on their local institutions and liberties. The particularist discontent was especially strong in Flanders, where it led to open, but unsuccessful, revolt.

During this period the country as a whole remained extraordinarily wealthy, but in the fifteenth century the decay of the mediaeval economic system produced local crises and depressions which aggravated particularist feeling against the central government. There was a certain displacement of trade and industry.

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[1] The episcopal state of Liége, lying along the middle Meuse, was not brought under the same government as the rest of Belgium till 1795. (On Stavelot see p. 179.) The Tournaisis was incorporated in Hainault in 1595. The Cambrésis was brought into close dependence on the government of Brussels by Charles V.

The process was beginning by which the commercial supremacy of Bruges (in the fourteenth century the greatest port in Northern Europe) was to pass to Antwerp. The Flemish cities were beginning to feel the competition of the rising English cloth-manufacture: on the other hand, new textile industries were being developed in East Flanders and Brabant. In the neighbourhood of Liége the exploitation of the local coalfields was accompanied by the rise of iron foundries.

b. Relations with France, England, and the Empire

The dynastic relationship between Burgundy and France could not long keep the peace between them. Profiting by a time of weakness in the monarchy, a new Great Power, commanding the resources of the Netherlands, was growing up on the northern frontier of France. That ran counter to all the traditions of French statecraft. The inevitable estrangement was precipitated by a vendetta between the House of Burgundy and the House of Orleans which won control of the French monarchy. Thus from 1419 to 1435 Burgundy was in alliance with the English, who were waging a war of conquest in France. In 1435 this alliance was broken for reasons of a temporary nature, and Burgundy took sides with France in return for territory in Picardy. But the interests of the Netherlands demanded the maintenance of trade with England, and the Anglo-Burgundian *entente* was restored. Duke Charles the Bold (1467–77) found himself in need of English support against the French King Louis XI, for the Burgundian occupation of Picardy had only deepened the antagonism between Burgundy and France. The struggle between these powers was renewed, and the duel (embittered by personal antipathy) between Charles the Bold and Louis XI was the principal factor in the European politics of this time.

The Emperors were too weak to prevent the absorption of more and more imperial territory in the Burgundian dominions, though they regarded that process with open or veiled dislike. Philip the Good hoped to have the Burgundian territorial aggregate converted into a formally independent kingdom by the Habsburg Emperor Frederick III. Charles the Bold tried to purchase the imperial consent to some such scheme by the betrothal of his daughter and heiress, Mary, to Frederick's son, Maximilian—the beginning of trouble for Europe. Meanwhile, Burgundian aggression in the Empire continued. Charles seized Gelders, overran Lorraine, bought Alsace from a Habsburg, and planned the conquest of the Rhineland.

In 1477 Charles the Bold met his death at Nancy in battle against the Swiss. He left no male heirs.

3. The First Period of Habsburg Rule (1477–1555)

a. Internal History

The Netherlands passed under Habsburg rule, and became connected with Spain, through a series of marriages and dynastic partitions.

Charles the Bold had left a daughter, Mary, as heiress of his dominions. In 1477 she married Maximilian of Habsburg, son of the Emperor Frederick III. The son of Mary and Maximilian, Philip the Fair, ruled in the Netherlands from 1493 to 1506, while his father became Emperor. Philip married a Spanish princess, Joanna, daughter of Ferdinand, King of Aragon, and Isabella, Queen of Castile. Thus Charles, the son of Philip and Joanna, inherited the Burgundian lands (1506), Castile (1506) and Aragon (1516). By the death of his grandfather Maximilian (1519) he acquired the Habsburg territories in Austria, but these he gave up to his brother Ferdinand. In 1519 he was elected Holy Roman Emperor as Charles V. In 1555 he abdicated. The Empire passed to Ferdinand, but Charles left to his own son Philip the kingdom of Spain, the Spanish dominions in the New World and the Burgundian inheritance of which the Netherlands formed the principal part.

In 1549 the political unity and individuality of the Habsburg Netherlands received formal expression in an Imperial Pragmatic Sanction, which laid down that their Seventeen Provinces[1] were to be indissolubly united, and that the succession to the sovereignty in each of them was to be by primogeniture.

In this period the Netherlands came more and more to be used as instruments in a Habsburg policy which did not answer to their needs or desires. At first indeed the hold of the dynasty on the country was rather weak; having gained a footing there chiefly because the Netherlands were afraid of French aggression, it had some difficulty in maintaining its authority at a reasonable strength. But the central administration was gradually elaborated and expanded, the particularist revolts in Flanders were overcome, a mixture of tact and pressure was applied to the Estates, and the Belgian aristocracy was attracted by the careers opened out to it in the Habsburg service. As the reign of Charles V proceeded, he became more and more able to use the resources of the Netherlands in order to meet the increasingly varied liabilities of

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[1] These were: in the Southern Netherlands, Flanders, Artois, Hainault, Brabant, Antwerp, Malines, Namur, Limburg, and Luxemburg; in the Northern Netherlands, Zeeland, Holland, Utrecht, Gelders, Zutphen, Overyssel, Groningen, and Friesland. France had given up her claim to suzerainty over Flanders and Artois in 1526 and 1529. The six northern provinces last mentioned were acquired by Charles between 1517 and 1543.

Habsburg policy in Germany, Italy, and the Mediterranean. The country was not wholly satisfied with its position, but the peace was kept through the great personal authority and popularity of Charles, who liked and understood the people of the land where he had been born and bred.

The wealth of the Netherlands was a main prop of the new Habsburg ascendancy in Europe. Under Charles V their commercial and industrial prosperity was well maintained. The economic processes which had been at work in the fifteenth century continued to develop. While nothing could save the old Flemish cloth-manufacture from decay due to English competition, the new textile and metal industries expanded and flourished; and while the trade of Bruges was dying Antwerp became the greatest port in Europe, attracting especially the new and rich commerce which had been created by Spanish and Portuguese enterprise in America, India, and the Far East.

b. Relations with France, England, and the Empire

The French monarchy had now recovered from the troubles of its English and Burgundian wars, and was pursuing an active and ambitious policy. It naturally viewed with profound jealousy the establishment of the Habsburgs on its northern, eastern, and southern borders. After a few preliminary passages of arms between the two Powers, Francis I took the offensive against Charles V, and a long series of campaigns took place between 1521 and 1559. The Netherlanders were ready to defend their country against French invasion, but they were anxious not to be involved in a war with France beyond the requirements of self-defence. At first they were able in this matter to exercise some influence on the policy of their rulers;

but later the tightening of the Habsburg grip on the country and the shifting of the main French offensive from Italy to the northern French frontier dragged them deeper into the conflict.

To maintain good relations with England was on the whole in the interest both of the Netherlands and of the wider Habsburg policy. But it is significant that Philip the Fair, out of anxiety to secure his inheritance in Spain, signed a commercial agreement with England, which, as giving undue advantages to English trade, was very unpopular in the Low Countries. England, on her side, was generally still inclined to look on the rulers of the Low Countries as natural allies against France.

The relation of the Netherlands to the Empire was formulated in the Transaction of Augsburg, an Act of the Imperial Diet in 1548. For some time past suggestions had been made in the Diet that the imperial States of the Netherlands now under Habsburg government should be made to contribute towards imperial taxation, but these proposals had met with emphatic opposition in the Netherlands. It was now enacted that the Seventeen Provinces were to form a Circle of the Empire (the Circle of Burgundy), and their sovereign was to be represented in the Diet; they were to contribute a fixed quota to imperial subsidies, but the laws and decrees of the Empire were not to apply to them. Thus though the obligation to pay imperial taxes was verbally acknowledged, not only for the old imperial States of the Netherlands, but for Flanders and Artois as well, the Empire was left without the means to enforce that obligation, and in fact the Seventeen States never fulfilled it.

4. SPANISH RULE: THE REVOLT OF THE NETHERLANDS (1555–1609)

a. Internal History

The revolt of the Netherlands against Philip of Spain was a desperate effort to loosen the hold of Habsburg rule, which was forcing them out of the path of their inclinations. When the movement of resistance began the principal causes of discontent were: the Government's measures against heresy, which were generally unpopular, if for no other reason, at least as being dangerous to local rights and interests; the presence in the country of Spanish troops, who were feared and hated both for their behaviour and because they might be used to crush opposition to the king's will; the burden of taxation, which had been especially heavy in the French war of 1556–9; the distrust shown by the Government towards the Belgian nobles who claimed to share in the direction of its policy; and pervading the whole situation, the undisguisedly unsympathetic, autocratic, and alien spirit of the king.

The result of the long series of campaigns waged in the country between 1567 and 1609 was that while the northern provinces of Holland, Zeeland, Utrecht, Overyssel, Groningen, Friesland, and North (or Lower) Gelders were permanently lost to Spain, the Southern Netherlands submitted on terms. It was chiefly religious feeling that caused this submission. The south was predominantly Catholic: the rebellion in the north was inspired by a Calvinism which became more and more intolerant. In the south Protestantism was to be found mainly among the lower classes in the cities, and was liable to express itself in acts of mob violence repellent to the Catholics, and especially to the aristocracy. Again, the southern nobles were jealous of William of Orange, the leader of the north, and disliked his alliance with Calvinism and democracy. Further, the military difficulties of resistance were on the whole greater in the south; in the Northern Netherlands the country was better suited to defence against attack by land, and it was easier to take advantage of Spain's comparative weakness at sea.

When Alexander of Parma, who came to the Netherlands as governor for Spain in 1578, showed himself inclined to be conciliatory, the Walloon provinces of Hainault and Artois, as well as French-speaking Flanders, soon came to terms: on the one hand, political privileges were to be respected; on the other, heresy was to be proscribed (1579). Parma then reduced the rest of the Southern Netherlands, partly by diplomacy and partly by force.

The fate of Antwerp and the Scheldt estuary was of particular importance for the future. In 1572 Flushing was captured by the rebels, and thus the port of Antwerp, then in Spanish hands, was bottled. After the sack of Antwerp by mutinous Spanish soldiers (1576) the city joined the revolt, and thus her communication with the sea was restored. But in 1585 she was captured by Parma, and, as the Dutch continued to hold Flushing, was again cut off from the sea.

b. *Relations with France and England*

In these years Spain tried to use its position in the southern provinces to establish its domination over France and England. Imminent danger from this quarter was familiar to France, but for England it was something new, and marks the beginning of the modern period of her relations with the Low Countries.

The Spanish menace gave the English and French Governments a deep interest in the revolt of the

Netherlands. For long, owing to their domestic troubles and weakness, they were not able to challenge Spain by open and formal interference, but each allowed the rebels to receive help from its territory. The situation was complicated by the English Government's jealousy of French influence in the Low Countries. The Netherlanders, not confident of their power to stand alone, tried to arrange some kind of dynastic connexion with France or England. The French Government, involved in a complicated struggle of religions and factions at home, was uncertain of its own mind, but it did not prevent the Duke of Anjou, a Valois prince, from accepting the advances first of the Catholic Walloons and then of William the Silent. But Anjou played his hand badly, and the English Government did its best to thwart him. After Anjou's death the rebels offered the sovereignty of the Netherlands to the French King Henry III (1584), but Henry refused, owing to pressure from the French Catholic League, which was looking to Philip for support. A similar offer was thereupon made to Elizabeth of England, who refused the sovereignty of the Netherlands because 'it bred a doubt of perpetual war'; but as the provinces still in revolt were now hard pressed by Parma, and a direct conflict between England and Spain was by this time unavoidable, she sent the Dutch rebels open military aid. But the English commander, Leicester, was a failure, and the Dutch were in great peril, when Philip made up his mind that the war must be ended by a direct blow at England. The army of Parma, with a fleet of transports, was to be concentrated on the Flemish coast; a Spanish fleet was to sail up the Channel, and under its protection Parma's troops were to make the crossing. But the English fleet broke the Armada in Calais Roads and off Gravelines, while Parma, who had no warships, was blockaded by Dutch and English squadrons in Nieuport and Dunkirk (1588).

England was saved, but Parma might still have conquered the Northern Netherlands if Philip had not ordered him to assist the Catholic League in France against Henry of Navarre, the leader of the Huguenot and Nationalist party, who in 1589 ascended the throne as Henry IV. The Spanish invasion of Northern France, though it had some temporary success, could not bring about a decision there, and meanwhile the Dutch made a great military recovery. In 1598 the Spanish effort was so far exhausted that the Treaty of Vervins was concluded with France. By the terms of this peace the sovereignty of the Netherlands was to pass to an Austrian Habsburg, the Archduke Albert, who was to marry the Spanish Infanta, but if they had no children the country was to revert to Spain —a contingency which was realized, as Philip had foreseen. In 1609 a Twelve Years' Truce was concluded with the Dutch, whose independence was practically, though not explicitly, recognized.

5. The Spanish Netherlands (1609–1714): the Origin of the Barrier System

a. Internal History

In 1626 the Austrian Archduke Albert died childless, and the provinces of the Southern Netherlands passed once more into the possession of the kings of Spain. The Government at Brussels, though it left in existence the provincial assemblies and other institutions of local self-government, became within its own sphere increasingly autocratic and Spanish. It has been described as an absolutism tempered by local autonomies. In 1632–3 a conspiracy against Spanish rule was formed by a number of Belgian nobles. Richelieu on the part of France fomented this movement, suggesting that the Southern Netherlands should become a republic. But the conspiracy was betrayed and crushed. The country resigned itself to the loss of control over its own destinies. The Estates General were not summoned after 1634. The *noblesse*, the clergy, and the higher *bourgeoisie* had to be content with their narrow provincial liberties, but round these there gathered a very deep sentiment of pride and loyalty.

The thorough and intense Catholicization of the country during the early years of the seventeenth century had very important results in the later history of Belgium. After the revolt the Church bestirred itself to strengthen its hold on the Southern Netherlands. Protestantism disappeared almost completely, and the Catholicism of the Belgian people became peculiarly profound and rooted.

The long war of the revolt had left the provinces in a state of acute economic depression and distress. They gradually revived, but from the outset they were debarred from reaching their former height of prosperity by the fact that the Dutch held the mouth of the Scheldt and closed that river to all but their own shipping. This closure of the Scheldt, which was maintained in practice even during the years of the Truce (1609–21), was recognized in a formal manner in the Treaty of Münster (1648). Amsterdam thus took the place of Antwerp, and the whole economic life of Belgium was affected by the change. Later in this period the new French protective tariffs and the wars which harried the country further depressed Belgian commerce and manufacture. Labour was diverted more and more to agriculture, which flourished so far as it was not affected by foreign invasion. The intensive cultivation of Flanders began in the seventeenth century.

It may be noticed that the life of the Belgian provinces in the seventeenth and eighteenth centuries, entirely different from, and in important respects antagonistic to, the life of the Northern Netherlands, was forming a Belgian nationality which was later to assert itself against Dutch rule in a way that completely upset the plans of Europe.

b. *Relations with France, Holland, and Great Britain*

The relations between the Southern Netherlands and neighbouring Powers fall during the period into two distinct stages.

Between 1609 and 1659 both France and Holland were still feeling the pressure of the Spanish position here, and in alliance (1635–48) laboured to improve their respective frontiers on the northern and southern sides of the provinces. England had no longer to fear Spanish aggression from the Low Countries; she was much taken up by her domestic troubles, and she was beginning to find her commercial interests in conflict with those of the Dutch. But under Cromwell the Elizabethan tradition was revived, and England took up a Spanish war (1655–9), partly religious and partly commercial, in the course of which she lent assistance to the French operations in Flanders.

Between 1659 and 1714, the power of Spain having fallen into hopeless decay, the situation changed. France, emerging from a straitened and difficult defensive, was now carried forward by her success into an aggressive movement which threatened to establish her domination in Europe. Especially she seemed about to bring the lands on the Lower Rhine permanently under her rule or control. French aggression in the Southern Netherlands was strenuously resisted by the Dutch, who were threatened, not only in their political independence, but also in their commerce: for the French occupation of the Lower Scheldt would have certainly led to the opening of that river and the revival of Antwerp. Great Britain, after a period of hesitation due to the dynastic aims of the later Stuarts and to commercial rivalry with the Dutch, at last, having taken William of Orange for her king, definitely joined Holland. The object of the allies was to make of the Southern Low Countries a reliable barrier against the French offensive in this direction. Eventually they succeeded in checking and throwing back the French advance.

In 1667 Louis XIV put forward a dynastic claim to Brabant. He was checked by the Triple Alliance, consisting of Holland, Great Britain, and Sweden. The English Government then deserted the Dutch, and Louis attacked Holland by way of the Meuse and Rhine (1672). The Dutch were saved by an obstinate defence under their stadtholder, William of Orange, and a series of wars followed between France and the Leagues which William formed against her. On the whole France was gaining ground in the Southern Netherlands (see p. 171, note), until in 1700, during an interval of peace, Louis suddenly put forward a claim to the whole of the Spanish Empire, and his armies were able to overrun the provinces. They were gradually beaten out of the country by the Allies under Marlborough.

By the settlement of 1713–14 (Treaties of Utrecht, Rastadt, and Baden) the Spanish Netherlands, considerably reduced since 1609 on their northern and southern frontiers (see pp. 171–2), passed to the Austrian Habsburgs. By the so-called Barrier Treaties (1715, 1718) the Dutch were to have the right of placing garrisons in a certain number of fortresses on the

French frontier, and the Belgian provinces were to contribute towards the maintenance of these troops. Great Britain guaranteed the arrangement, and promised assistance if the barrier should be attacked.

6. Austrian Rule and the Revolt of the Belgians against Joseph II (1714–90)

a. Internal History

Between 1714 and 1781 the only serious disturbance of the peace in Belgium was the French invasion during the War of the Austrian Succession (1744–8). The Barrier Treaties at first aroused considerable indignation in the country as inflicting on it a humiliating expense, but there was no possibility of resisting the will of the Powers. The Habsburgs were bound by treaty to respect established liberties and privileges, and their government, after some initial severities in the assertion of its authority, long observed its promise. More particularly, Duke Charles of Lorraine, Governor-General under Maria Theresa, was scrupulous in respecting Belgian susceptibilities.

The industry and commerce of Belgium were still half-strangled by artificial restrictions. The Scheldt remained closed. The tariff-system could not be altered without the consent of Great Britain and Holland. When the first Austrian sovereign, Charles VI, tried to turn the barrier of the Scheldt by making Ostende a great port, and organized an Ostende East India Company (1722–3), the undertaking had to be dropped in face of British and Dutch opposition. Agriculture, on the other hand, was very prosperous, and in Western Belgium the development of intensive cultivation continued.

When Joseph II introduced his reforms the country was singularly contented. There were no serious political or social grievances. There were no oppressive remains of feudal custom. Landlords were resident, the clergy was in a condition that entitled it to respect. The new ideas which were stirring in Europe were accepted only by a very small group among the *bourgeoisie.* The great mass of Belgians only wished to be left alone in their traditional liberties and their religion.

The aim of the Emperor Joseph II (1780–90) was to level away the anomalies of local and class privilege, and introduce a centralized, uniform administration throughout his dominions. In Belgium he first attacked the power of the Church (1781–5); he suppressed some of the religious houses, forbade appeals to Rome, and tried to bring the education of priests under State control. Both clergy and laity were indignant, and disturbances broke out. The Emperor then swept away the old local magistracies and courts, and introduced a new, uniform system of administration and judicature (1787). The Belgians were touched in their patriotic feelings and many of them in their vested interests. In 1789 the Government, finding itself in conflict with the Provincial Estates, tried to treat them with a high hand. The Joyous Entry, the Charter of Brabant, was revoked. Then came a revolution. The Austrian troops were driven into Luxemburg. In January 1790 Estates General met at Brussels and voted into existence the United States of Belgium. The new republic perished the same year, but its rapid dissolution was principally due to the fact that the Emperor Leopold II, the successor of Joseph, promised to re-establish the old order.

The revolution in Austrian Belgium was essentially religious and conservative. Its outbreak was, of course, made easier by the fact that insurgency against government was then in the air, but its aims were wholly different from those of the revolution which had recently begun in France. The adherents of the new French ideas (the so-called Vonckist party) so provoked the wrath of the majority that they had to flee the country.

There was naturally more anti-clericalism in the revolution which broke out at the same time in the episcopal state of Liége. Here the prince-bishop was restored by Austrian troops in 1790.

b. External Relations

After 1714 there was no further attack on the Netherlands until the French, in the War of the Austrian Succession, fell out with Great Britain, and invaded the Provinces (1744). The French arms were successful (for example, at Fontenoy, 1745). But France, in spite of her victories here, was not in a position to keep her gains, and abandoned them by the Treaty of Aix-la-Chapelle (1748). The alliance concluded in 1756 between France and the Habsburgs protected the Southern Netherlands from French invasion until the end of the old régime. Nevertheless, the idea that France might some day reach the mouths of the Scheldt and the Rhine was not dead, and needed only the provocation of danger to become violently active. And already Rousseau was preparing the way for the revolutionary doctrine of the natural limits. (See further on this point p. 216.)

It was now the settled policy of Great Britain and Holland not only to maintain the Southern Netherlands as a barrier against France, but also to prevent Austria from so developing her position here as to enter into competition with British and Dutch sea-power and commerce. The suppression of the Ostende Company at the instance of the Maritime Powers has already been mentioned. After this check the Habsburgs did not set much store by their possessions in the Low Countries, which lay far away from their other territories, and suffered from Dutch and British fears and susceptibilities. Joseph II nearly brought on a general war in Germany by trying to exchange the Provinces for Bavaria. Having failed to get rid of them, he was anxious to improve their value, and almost went to war with the Dutch over the question of the Barrier Fortresses and the closure of the Scheldt. The matter was finally settled by a compromise: the barrier system was abolished, but the Scheldt remained closed (1785).

The outbreak of the Belgian Revolution gave some trouble to Europe. Prussia, hostile to Austria, lent the rebels underhand and ineffective support. France at first sympathized with the movement, then found that it was not like her own revolution at all, and in any case was too much taken up with her domestic affairs to intervene. Great Britain, anxious to maintain the *status quo* which gave her peace, persuaded Holland and Prussia to join her in guaranteeing to the Belgians their ancient liberties, thus making it easier for them to return to Austrian rule (Convention of Berlin, January 1790).

7. THE SOUTHERN NETHERLANDS UNDER FRENCH RULE (1792–1814)

The invasion of France by Austria and Prussia in 1792 led to a French counter-attack with a great force of national energy behind it. The traditions of the Rhine frontier were revived. France was to have her ‘natural limits’.

By their victory at Jemappes (November 1792) the French conquered the Austrian Netherlands. Dumouriez, commanding the army of invasion, recognized that the general feeling of the country was not in sympathy with the French Revolution, and in order to avoid friction he wished to organize here a republic under the protection of France. But for urgent financial reasons, as well as in the spirit of acquisitiveness produced by victory and under the impulsion of national traditions, the Convention made up its mind to annex the country. It soon became clear that this would be done, and that the Scheldt would be opened for the profit of France. But Great Britain could not accept this, and the French designs on the Netherlands were the immediate cause of her entry into the war (January 1793).

The French were beaten out of the country in 1793, but the next year they returned, and having defeated the Austrians at Fleurus, drove them beyond the Meuse and beyond the Rhine.

On October 1, 1795, the Habsburg Netherlands and the episcopal territory of Liége were declared annexed to France.[1] The country was divided into departments on the French model. These did not correspond to the old territorial divisions, but their lines can be traced in the existing provinces of Belgium (compare p. 177). The French administrative system was imposed, the local authorities being appointed at first by French Commissioners.

The rule of the French Directory (1795–9) was on the whole very unpopular in Belgium. The personnel of the administration was not good: it was both corrupt and pedantic. Its principles were antagonistic to the spirit of the people. Its persecuting anti-clericalism and the introduction of conscription were especially offensive to the Belgians. But it was useless to resist;

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[1] They were definitely ceded by Francis II, as hereditary ruler of the Habsburg Netherlands and as Emperor, in the Treaties of Campo Formio (1797) and Lunéville (1801).

a rising of peasants against compulsory military service was easily suppressed (1797).

Under the Consulate (1799–1804) and the Empire (1804–14) things were much better. The administration was considerably improved; the persecution of the clergy was gradually relaxed until the Concordat between the Papacy and the French Government re-established the Church (1801). But still there was little liking for French rule. Conscription remained a burden, and Napoleon's quarrel with the Papacy largely undid the good impression which had been made by the Concordat. In 1813, when the Empire was in defeat, the French Government in Belgium, no longer supported by arms, fell rapidly to pieces.

Nevertheless, the years of French rule had a profound influence in Belgium. The old framework of Belgian society—its legal and political institutions—had been swept away, and though national traditions were not lost, French law and French administration laid the foundations of a new social order. Napoleon had tried deliberately to Gallicize the Belgians. Whatever may have been the success of his efforts, French influences were now very strong among the educated classes, and especially among the *bourgeoisie.* French ideas had spread, and had affected even their opponents. Many Belgians had formed personal connexions with France. Thus the way was prepared for the formation of a Liberal Party, French in its inspiration and sympathies, and far more powerful than the Vonckist group of 1789.

By the Treaty of Amiens (1801) Great Britain acquiesced in the French annexation of Belgium, and it was not this question, but the question of the command of the Mediterranean, that broke the peace (1803). But the later prolongation of the struggle fixed the determination of Britain to reduce France, here as elsewhere, to her former limits. Napoleon's intention to make Antwerp a naval base was noticed with alarm in this country.

In 1809, while Napoleon was operating against Austria, the British Government attempted a diversion at the mouth of the Scheldt, with the hope of rallying the discontented elements in the Netherlands and North Germany, but the expedition was wasted on the island of Walcheren.

8. Belgium joined to Holland (1814–30)

In 1814 the Allies had to consider the question what was to be done with Belgium. France was to be confined practically within her old frontiers (see p. 173), and a barrier was again to be erected on her northern flank. But Austria had no desire to take back her provinces in the Netherlands; she wished to be free of the liabilities involved in direct contact with France. A new Lotharingia or 'Middle Kingdom' was suggested,[1] but it was soon decided to join the Belgian provinces to Holland, so that Holland and Belgium (with the exception of Luxemburg) should form a single kingdom of the Netherlands, having one and the same political organization, in which Dutch and Belgians and the adherents of all creeds were to enjoy equal rights. Luxemburg, including the part of that country now in the kingdom of Belgium, was to be a Grand Duchy and a member of the Germanic Confederation, but its Grand Duke was to be the sovereign of the Netherlands; the fortress of Luxemburg was to be held by the kings of Prussia and the Netherlands in the name of the Germanic Confederation.

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[1] In 1813 the Prussian Government, in its anxiety to obtain the alliance and subsidies of Great Britain, had thrown out the suggestion of a kingdom which should extend 'from the Elbe perhaps to the Scheldt' and should be given a Hanoverian prince for its sovereign. In 1796 the British Government, wishing to detach Prussia from France, had hinted that it would be willing to see Belgium in Prussian hands. But two years later it had already formed its scheme of uniting Belgium to Holland.

It was thought that this arrangement would create a reasonably strong barrier. It was hoped that the Dutch and Belgians would easily coalesce through the racial and linguistic connexion between Dutch and Flemings. Moreover, the Belgians might be expected to appreciate the economic benefits of this union, which would secure them for the future against the restrictions on their commerce formerly imposed by Holland. Great Britain strongly supported the plan, not only because it seemed to give an adequate guarantee against French aggression, but also because it provided a means of compensating the Dutch for the loss of those of their colonies (in South Africa and elsewhere), which Great Britain, having occupied them while Holland was under French control, was now intending to keep.

Two military conditions were made by the Powers. First, it was stipulated in 1815 that certain fortresses should be constructed along the southern Belgian frontier, to be paid for out of the war-indemnity imposed on France. Secondly, Napoleon's scheme for making Antwerp a naval base was never to be revived. Antwerp was to be a purely commercial port.

The Powers neglected the fact that the Belgians showed no signs of wishing to be linked to Holland. In 1814 a council of notables at Brussels expressed their desire to return to Habsburg rule, either as subjects of the Emperor Francis, or as citizens of an independent kingdom under an Austrian archduke. The first alternative was impossible owing to the refusal of the Emperor of Austria to take up his former possessions in the Netherlands; the second did not seem to provide for a strong enough barrier against France.

Within sixteen years of its erection the new barrier collapsed of itself. The Dutch and Belgians came into the Union as two very different and far from sympathetic nationalities. Both sides were prejudiced by traditional antagonisms. The mere community, or similarity, of race and language was powerless to reconcile Dutch and Flemings. The process of coalescence, which would have been difficult enough in any case, was made impossible by the stiffly obstinate and autocratic character of the Dutch ruler of the new kingdom, William I.

The Belgians and the Dutch quarrelled immediately over the details of the Union, and especially over the question of representation, and the Belgian opposition to the fundamental law of the Constitution was overcome only by arbitrary action on the part of the King.

From 1815 to 1830 the Belgians, notwithstanding the economic progress which the Union enabled them to make, were growing more and more discontented. The administration of the kingdom was practically Dutch. The King, who was a Dutchman, had very wide powers; almost all the ministers, the higher grades of the civil service, and the commands in the army were in Dutch hands, yet the Belgians of the kingdom outnumbered the Dutch by nearly a third. In the chamber the two nationalities had equal representation, but the Belgians frequently had the annoyance of being outvoted by very small margins, due to the adherence of a few Belgian officials to the solid Dutch vote.

The King was a Calvinist, and his Government was obviously suspicious of the Catholic clergy. An attempt was made to bring the education both of laymen and priests more under State control. The Belgian clergy, which from the first had disliked the complete indifference to creed professed by the Constitution, turned all its great influence against the Government, and a very strong Catholic party arose to fight its battle.

There were financial grievances. The Belgians were angry at being assigned a full share of the very heavy burden of debt with which Holland had entered the Union. Further, certain forms of taxation introduced by the Government were very unpopular: thus a tax on ground corn was said to be especially hard on the Belgian poor.

By a decree of 1822 Dutch was made the only official language, to the indignation of the Walloons. The Flemings were little better for the change, since in pronunciation Dutch and Flemish had diverged very widely.

The opposition of the Belgian press was lively, and irritated the King. A Press Decree issued during the Napoleonic invasion of 1815 was permanently maintained, and was used against Belgian journalists in a way that proved both ineffectual and exasperating.

By 1828 the King's policy had succeeded in uniting the two parties among the Belgians. The Liberals and the Catholics, in spite of wide differences of principle, made a formal alliance against the Government.

The French Revolution of July 1830 provoked in Brussels a street-riot, which in a very short time expanded into a national rebellion. By the end of October 1830 the insurgents held all the southern provinces of the kingdom. They occupied not only the present territory of Belgium, but all Luxemburg, Limburg, and Dutch Flanders. Only the citadels of Maestricht and Antwerp were still occupied by Dutch garrisons; while the fortress of Luxemburg remained in the hands of the Prussian garrison which here represented the Germanic Confederation.

9. THE CREATION OF THE KINGDOM OF BELGIUM (1830–9)

The Belgian Revolution reopened the Barrier Question for Europe. Its peaceful solution was immediately endangered from three directions. First, the Tsar and the King of Prussia were inclined to give uncompromising support to the King of the Netherlands, partly from dislike of revolution in general and partly out of fear lest France, having lately overthrown her legitimist government, might break out into a revolutionary and aggressive war. Secondly, in France, where for many years there had been a growing desire to upset the Treaties of 1815, and the Revolution of July had caused a dangerous restlessness, there was a feeling that the creation of the Kingdom of the Netherlands had been essentially an act of hostility towards the French nation, and there was a party at Paris which would have been glad to seize the opportunity to reassert French domination in the Low Countries.[1] Thirdly, in Belgium there was a section of the Liberals, small in numbers, but active and influential, which would have welcomed a close connexion, or even complete union, with France.

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[1] In 1829 Polignac, Charles X's Minister for Foreign Affairs, had formed a plan by which France was to re-establish her position in Europe by annexing Belgium. Polignac counted mainly on Russian assistance; for Russia was then engaged in a successful war with Turkey, and it was hoped that she would consent to the aggrandizement of France in the West as the price of French support for Russian aggrandizement in the Near East. Polignac had also provided 'compensation' for the other Powers, and had taken into account the Belgians' hatred of Dutch rule. But the plan came to nothing. Prussia came forward to help the Tsar in his Turkish business in order to relieve him of the temptation to strike a bargain with France.

The situation was saved, partly perhaps by the Polish rebellion which broke out at the end of November 1830, and prevented the Tsar from undertaking in the Netherlands a resolute championship of the monarchical principle, but still more by the pacific intentions of the British and French Governments, and especially by the diplomacy of Talleyrand, then French Ambassador in London. The British Government recognized that its kingdom of the Netherlands was hopeless. It tried to find a solution containing three elements: the Belgians were to be released from the Union which they detested; the King of the Netherlands was not to be treated too hardly (for after all he had assumed the sovereignty of Belgium at the request of the Powers, and in exchange for colonies withheld by Great Britain); and the barrier against France was to be reconstructed in a reliable form. On the other hand, Louis Philippe and Talleyrand were strongly of the opinion that Belgium was not worth a general European war with the odds heavily against France; they were willing to act in harmony with the British Government, only they wished to maintain the dignity of France and to give as little opening as possible to French nationalist criticism.

A conference of the Powers met in London on November 4, 1830, and by the end of the month had imposed an armistice in the Netherlands (protocols of November 10 and 17). A protocol of December 20 recognized in principle the independence of Belgium.

On January 20, 1831, another protocol declared that the King of the Netherlands should retain the territories of the former Dutch Republic as they had been constituted in 1790 (subject to an exchange of *enclaves*), and that he should continue to hold the Grand Duchy of Luxemburg.

✓ This territorial arrangement was due, first, to a consideration of the claims which the King of the Netherlands had upon the Powers, and secondly by the fact that the Powers which feared French influence in or attacks on Belgium wished the mouth of the Scheldt, the fortress of Maestricht, and the still more important fortress of Luxemburg to be kept in reliable hands (see p. 186).

Further, as a measure of precaution against any aggression in Belgium (it was of course from France that such aggression was then generally feared), a clause of the same protocol of January 20 contained the provision that Belgium was to be a neutral State.

But the Belgians were indignant. They were being asked to surrender Dutch Flanders, a large part of the province of Limburg, and the whole of Luxemburg, yet the people of these districts had joined in the Revolution, and their deputies were sitting in the national congress at Brussels. Again, the imposition of neutrality on Belgium deprived her of the hope of winning back these territories in the future. The terms of the protocol were rejected by the Belgian Congress.

The Belgians then tried to divide the Powers, and to force France on to their side by their choice of a king. The Gallophil Liberals had already proposed the Duc de Nemours, a son of Louis Philippe. Another candidate, whose election would have been a source of great anxiety to the French monarchy, was the Duc de Leuchtenberg, of the Napoleonic connexion.[1] Early in January 1831 the Duc de Leuchtenberg had seemed the stronger candidate, but after learning the decision of the Powers on the boundaries and neutrality of Belgium the Congress elected the Duc de Nemours (February 3, 1831). It was known that England would rather go to war than allow a French prince to sit on the throne of Belgium, and it was hoped that France would take up the challenge. But the intrigue failed. Louis Philippe refused to accept the Belgian offer (February 17), and the Conference of London issued another protocol declaring that the arrangement of January 20 was final.

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[1] He was the son of Eugène Beauharnais.

The Powers now worked to obtain the throne for Leopold of Saxe-Coburg, a German who was the widower of an English princess and was resident in England. France was reconciled to the scheme, partly by a promise of the Powers (April 17) that certain Belgian fortresses near the French frontier should be demolished, and also by the prospect of a marriage between Leopold and a daughter of Louis Philippe. The Belgians, repulsed by France, were ready to take Leopold on condition that he should secure some modification in their favour of the protocol of January 20. On June 4 he was elected King of the Belgians. The Powers were willing to encourage Belgian hopes, and the Eighteen Articles of June 24 promised a reconsideration of the question of Luxemburg and Limburg, and an equitable arrangement as to the navigation of the Scheldt. Leopold announced that he would accept the crown which had been offered to him if the Belgians would assent to the Eighteen Articles, and this condition the Belgian Congress fulfilled on July 9.

But the King of the Netherlands, supported by the Dutch, would not accept the Eighteen Articles. He, like the Belgians, had hoped that the Powers would not be able to settle the problem peaceably and that a war might give him back what he had lost. Now he tried to embroil Europe by a sudden invasion of Belgium, which was successful (August 2–12). The Belgians were badly beaten, and, as the only possible remedy, a French Army appeared in the country.

The Dutch troops retired, leaving a garrison in Antwerp. Opinion in England then grew uneasy at this French invasion. France wished to use this opportunity to have the fortresses on the southern Belgian frontier destroyed at once. She was told that the Powers would not be pressed. Franco-British relations were becoming strained when the French troops were recalled (September 15, 1831).

On October 14, 1831, the Conference of London published the Act known as the Twenty-Four Articles. This assigned to Belgium the south-west part of Limburg and the western part of Luxemburg, leaving to the King of the Netherlands the fortress of Maestricht and the eastern part of the Grand Duchy of Luxemburg, within which lay the town of Luxemburg and the fortress of the Germanic confederation. Dutch Flanders was to return to Holland. The Scheldt was to be opened to navigation, but Holland was to have the right to impose tolls at the mouth of the river. The Belgians were angry; it was not all that they had hoped for since the Eighteen Articles had left open the matters in dispute. But their proved inability to resist a Dutch invasion by their own strength had shown the majority of their deputies that they must accept the will of the Powers. They agreed to the Twenty-Four Articles (Treaty of November 15, 1831, between the Five Powers and Belgium).

The King of the Netherlands held out. His troops still occupied the citadel of Antwerp, and after dilatory negotiations it at last became necessary for British and French fleets to blockade his coasts and for a French Army to take Antwerp by siege (November 1832). On May 21, 1833, he promised not to attack the Belgians, but he refused to accept the Twenty-Four Articles. The result was that for the next few years the whole of Limburg and the whole of Luxemburg were included in Belgium.

At last the Dutch, who had loyally supported their Government throughout the Belgian trouble, began to be restive under the burden of keeping their army on a war footing, and their king was obliged to come to terms. In 1838 he suddenly gave his adhesion to the Twenty-Four Articles. The Belgians were furious; they had hoped that the obstinacy of the king would leave them permanently in possession of all Limburg and Luxemburg. They tried to obtain some alteration of the Articles, offering to purchase the territories which they were being required to surrender; but the Powers, and especially Great Britain and Prussia, were determined that the territorial arrangements must stand. Thus eastern Luxemburg and northern and eastern Limburg reverted to the King of the Netherlands.

The final treaty between Belgium and Holland was signed on April 19, 1839. Article VII laid down that 'Belgium, within the limits specified in Articles I, II and IV, shall form an independent and perpetually neutral State. It shall be bound to observe such Neutrality to all other States'. (This Article was a textual repetition of the clause in the Treaty of November 15, 1831.) On the same day a treaty signed in London by the five Great Powers—Great Britain, France, Russia, Austria, and Prussia—declared that the Articles of the Belgo-Dutch Treaty 'are considered as having the same force and validity as if they were textually inserted in the present Act', and that 'they are thus placed under the guarantee of their said Majesties' (the sovereigns of the five Powers). The Treaty of November 15, 1831, was abrogated, but has been considered to keep an interpretative value.

As regards the Belgian fortresses, while certain of them were demolished in accordance with the promise of the Powers to the French Government, a Convention of December 14, 1831, imposed on Belgium the maintenance of certain others, which should form a system of defence against France. At the same time a secret clause (signed by Leopold I, but not confirmed by the Belgian Parliament) undertook that in case of danger Belgium should concert measures for the safety of these fortresses with the other Four Powers. But this clause itself contained a reservation limiting its scope by 'the obligations which the perpetual neutrality of Belgium shall impose on His Majesty the King of the Belgians and the Four Courts themselves'. Further, on January 23, 1832, an interpretative Act was signed by the plenipotentiaries of the Four Powers at the request of the French Government, declaring that the provisions of the Convention 'cannot and ought not to be understood except as reserving the full and entire sovereignty of His Majesty the King of the Belgians over the fortresses indicated in the said Convention, and also as reserving the neutrality and independence of Belgium, an independence and a neutrality which, guaranteed on the ground of the same rights by all Five Powers, should establish a link of an identical nature between each of these Powers and Belgium'. It was also declared that this interpretative Act placed beyond doubt 'that all the clauses of the Convention of December 14th are in perfect harmony with the character of a neutral and independent Power, which the Five Powers recognize to be the status of Belgium'.

It is obvious that while at the time the neutrality of Belgium was expected to be useful as an obstacle to French aggression, which was then most to be feared, there is nothing in the Treaty of 1839, or in the circumstances under which it was framed, that can give ground for claiming that any of the other Powers did not bind itself with regard to that neutrality in exactly the same way as France.

10. OUTLINE OF THE BELGIAN CONSTITUTION AND LOCAL GOVERNMENT

Belgium has a written constitution dating in the main from 1831, but containing certain later modifications with regard to the franchise.

Under the constitution the executive power belongs to the Crown acting through responsible Ministers, by one of whom every act of the king must be countersigned; the legislature is composed of the king, a Senate, and a Chamber of Representatives.

There are now eleven Ministries, namely, for war; the interior; finance; foreign affairs; science and art; justice; agriculture and public works; railways; marine, posts and telegraphs; industry and labour; colonies. Ministers without portfolio may be members of the Cabinet.

The king convokes the Chambers, and has the power to summon them for extraordinary sessions in addition to their regular annual meeting in November, when they must sit for at least forty days. The king also prorogues the Chambers, and can dissolve both or either of them.

Ministers can demand to be heard, and their presence can be required, in either chamber, but a Minister may not vote, nor take part in debate in an ordinary way, except in a Chamber of which he is a member.

Legislation may be initiated by any branch of the legislative body, but Bills relating to finance and to the annual contingent of the army must be first voted on in the Chamber of Representatives.

Legislation may not contravene the Constitution, which can be altered only by a special procedure. To this end both the Senate and the Chamber of Representatives must pass a resolution to the effect that there is reason for a change. Thereby both Chambers are automatically dissolved. The Parliament next elected may alter the part of the Constitution indicated by the resolution of its predecessors, but the change must be debated by a quorum of two-thirds, and must be voted by a two-thirds majority of those present.

Representatives are paid a salary of 4,000 francs (£160). Senators are unpaid. Members of either Chamber are immune from prosecution for votes or speeches.

Any citizen having a vote for the Chamber of Representatives is himself eligible to it. Candidates for the Senate must be at least forty years of age and pay 1,200 francs (£48) in direct taxes or own immovable property of 12,000 francs 'cadastral revenue' (i. e. letting value according to an assessment of land and buildings originally made in 1858 for the purposes of land-taxation), with the exception that in provinces where this rule would make the number of persons eligible to the Senate less than one in 5,000 of the population the number is made up to this proportion by the admission of the most highly taxed.

Elections for the Chamber of Representatives are held in half the constituencies every two years, unless a total dissolution intervenes. For the Senate elections are held in half the constituencies every four years. Thus half the Chamber of Representatives is renewed biennially, half the Senate quadrennially. Total dissolutions are very rare.

There are twenty-nine large constituencies for the Chamber of Representatives, each returning several members. Each member must represent not less than 40,000 inhabitants. The total number of members is now (since 1912) 186.

Out of 120 senators, 93 (half the number of representatives) are directly elected. For this part of the Senate there are twenty-one large constituencies, in which each senator must represent not less than 80,000 inhabitants. The remainder of the Senate is elected by the provincial councils, which are each represented by two senators, if the population of the province is less than 500,000; by three, if the population is between 500,000 and 1,000,000; by four, if it is over 1,000,000. The sons or the heir-apparent of the king become full members of the Senate at the age of twenty-five.

The franchise has been widened from very narrow original limits. Its principle is now universal male suffrage, modified by a system of plural voting.

By the Franchise Law of 1893 every male citizen of twenty-five years or upwards, on condition of having been domiciled for one year in the same *commune*, and of being free from legal disqualifications, has at least one vote for the Chamber of Representatives. An additional vote is given to every father of a family aged 35 or more, paying 5 francs in direct taxes, and also to every man over 25 drawing 100 francs' income from the Belgian funds or owning immovable property with a cadastral revenue of 48 francs. Two additional votes are given to those who hold diplomas of higher education, or fill or have filled offices, or practise professions, which imply such an education. But no one citizen can use more than three votes.

The franchise for the Senate is limited to male citizens of 30 years or upwards, otherwise its conditions are the same as for the Chamber of Representatives.

The following table gives the distribution of votes for the Senate and Chamber among the electorate of the year 1912–13.

	Senate.	*Chamber.*
Number of voters	1,483,994	1,745,666
Number with one vote	761,864	1,005,094
Number with two votes	402,444	412,721
Number with three votes	319,686	327,851
Total number of votes	2,525,810	2,814,089
Excess of votes over voters	1,941,816	1,068,423
Excess per cent.	70	61

The propertyless single voters in 1912–13 were almost 59 per cent. of the whole electorate, but had less than 30 per cent. of the total number of votes for both Chambers taken together. Thus the plural voting system works against the urban labouring classes, while it favours the peasant landowners.

The register is annually revised by the communal authorities. Voting is compulsory. Polls are held on the same day in all constituencies taking part in an election. There are no by-elections, vacancies being provided for at regular or general elections by combining with the 'titular' candidates to be immediately returned a number of candidates known as 'supplementary'.

Since 1899 a form of proportional representation has been in use. In each constituency either each party makes out a list of titular or supplementary candidates, or certain parties combine to issue a common list. A voter may either accept a list as it stands, leaving the names in the order suggested by the party-organization, or he may modify that order. The system has worked for slowness in the increase or decrease of party-strengths, and also towards the fusion of parties or party-wings, as these find it advantageous to combine for the purpose of issuing joint lists.

There are nine provinces in the kingdom. Each has a governor, an elected council, and a permanent deputation of that council. The governor is appointed by the central government. He is the head of the provincial administration, has the duty of maintaining order, and presides over the permanent deputation.

The franchise for the provincial council is the same as that for the Senate, but elections to it are decided by ordinary majority votes, and councillors need not be more than 25 years of age. Elections are held for half the council once in every four years.

Full meetings of the provincial council are held fifteen days each year. The continuous work of provincial administration is carried on by the council's permanent deputation, composed of six members, three of whom are elected by the council every four years. Except in certain specified cases, all provincial taxes must be voted by the full council.

The provinces are divided into *communes*, of which there are 2,632 in the kingdom. *Communes* with less than 5,000 inhabitants are grouped in *arrondissements*, each of which is supervised by a commissioner acting under the direction of the governor and permanent deputation. *Communes* with upwards of 5,000 inhabitants have a considerable measure of autonomy.

The communal council is elected on the same franchise as the Senate, except that voters must have been domiciled for three years in the *commune*, and may have additional votes according to the amounts which they pay in taxation or the cadastral revenue of their land. No one may use more than four votes in communal elections. Supplementary councillors represent capital and labour respectively in *communes* with over 20,000 inhabitants.

The communal council elects a college of *échevins*, numbering from two to five, and nominates a burgomaster, whose appointment must be approved by the king. The burgomaster is responsible for the police, and he and the *échevins*, besides administering communal affairs, are entrusted with the execution of laws and decrees of the central government. Communal taxes (with certain exceptions) must be voted by the whole council, which also appoints municipal servants.

The approval of the Crown is needed for provincial and communal expenditure.

The provincial and municipal administration of Belgium is partly modelled on the French Napoleonic system, and partly embodies a national tradition.[1] In France, the centralizing monarchy, whose work was completed by the Revolution and Napoleon, was essentially national; in Belgium, up to the end of the eighteenth century, the national life was in the provinces and towns, while the central government was imposed from without, and was, on the whole, most popular when its action was most restricted. The result of this difference in development is that the modern Belgian State is less centralized than the French. The larger Belgian *communes*, especially, have a vigorous life of their own, enjoying in practice wide powers of self-government. The *échevins* and the communal councils have a much more important share in municipal administration than the corresponding bodies in France. On the other hand, the burgomaster, though not holding the autocratic position of the French *maires*, may derive considerable influence from the traditions of their municipalities and the strength of municipal feeling. The burgomasters of Brussels, Antwerp, Ghent, and Liége have acted together as mediators in serious crises of national politics.

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[1] Apart from the actual working of Belgian local government, it may be noticed that its terminology contains reminiscences of the old order. There were ‘ Governors ’ and ‘ Permanent Deputations ’ (of the estates) in the old Austrian provinces. The *échevins* have their predecessors of that name in the cities of mediaeval Belgium : indeed the name goes back to the local government of Frankish times.

11. NOTE ON BELGIAN PARTIES, 1831–1914 (INTERNAL POLICY)

From 1831 to 1885 political power in Belgium was divided between the Liberal and Catholic parties. Since 1885 the Belgian Labour Party has formed a third important element in the politics of the kingdom.

The early Liberals drew their strength mainly from the upper *bourgeoisie* and especially from the Walloon towns. Their political thought and their sympathies connected them closely with France.

For the most part they were moderates; they wished to reduce the political and social influence of the Church, but they had carried through the Revolution in alliance with the Catholics and were ready for compromise. Coalition Cabinets were in power till 1847, and one of these, in 1842, settled the question of primary education in a way that proved very favourable to the clergy. Even after 1847 the moderate Liberals prevailed in the party counsels till 1868.

The predominant section of the Liberal Party in these years was decidedly undemocratic. Having extended the franchise in 1848 so as to increase the urban electorate, Liberal Governments were content to leave it on such a narrow basis that just before the Catholics carried their franchise law of 1893 the electorate of the kingdom numbered only 137,772 voters. The Liberals were in fact a not very large minority of the nation, and it was on a narrow franchise, specially favourable to the *bourgeoisie*, that their power depended. It may be said that in general the Liberal Party was inclined to uphold the power of the State as against other corporate interests (local, ecclesiastical, &c.), and that in economics it leaned to the doctrine of *laisser-faire*.

About 1868 there came into prominence a more

Radical and anti-clerical section of the party. In 1878 the influence of this section had become so strong that the Liberal Cabinet of Frère-Orban upset the educational compromise of 1842. That compromise, while enforcing the principle of State-education, had in effect given the Catholic clergy all the control they wanted over the education which the State provided. The law of 1878 made that education strictly undenominational. The result was a most bitter political and social conflict which lasted till 1884 (see pp. 263–4). In that year the Catholics came into power with a large majority, and the Liberals have not since held office.

The Liberals at this time had two powerful forces against them. On the one hand, in the struggle over the Education Act their opponents had raised against them all the strength of popular Catholic feeling, which was especially great in the Flemish-speaking rural districts. On the other hand, the social unrest which was becoming intense in the Walloon industrial areas could find no adequate representation through a party which disapproved of State intervention in economic matters and was largely composed of Walloon employers; thus industrial discontent sought expression through a new Socialist Labour Party. The Liberal Party was further weakened by its own internal disputes over the suffrage question, with Whig *Doctrinaires* on the one side and Radical *Progressistes* on the other.

The Franchise Law of 1893, which introduced manhood suffrage tempered by a plural voting system that was almost as favourable to the peasantry as to the *bourgeoisie*, was a severe blow to the Liberals; in the elections to the Chamber of 1894 they won only 19 seats out of 152.

Since 1894 the Liberals have somewhat increased their power, largely owing to the introduction of proportional representation (1899), which the more advanced section of the party obtained in alliance with the Socialists.

Yet they remained weak. Thus, though the influence of the Radical section has grown, the party has still suffered from internal divisions. For example, in the elections of 1912, the experiment was tried of an alliance with the Socialists to overthrow the plural voting system. But this manœuvre led moderate Liberals to vote for the Catholics, and proved a failure.

Again, as an anti-clerical and predominantly Walloon party, they have had against them the vehemence of the Flemish movement, which has been strongly Catholic in its spirit, while the Socialists have diverted from them much of the Walloon and anti-clerical elements in the electorate.

Thirdly, the Liberals have not succeeded to the same degree as their adversaries in extending and strengthening their influence through popular associations for mutual benefits (co-operative societies, &c.). Such work has been on the whole uncongenial to their social and political outlook. They have had, indeed, their anti-clerical Freemasons' lodges, and lately tried to develop these and other societies in the party interest, yet they have remained a long way behind the Socialists and Catholics in this respect.

In 1914 there were 45 Liberals in the Chamber of Representatives out of a total of 186 members; in the Senate there were 35 Liberals out of a total of 120.

The Belgian Catholic Party, under the early narrow franchise, represented primarily the aristocracy and the Church, and therefore contained strongly conservative and undemocratic elements. Nevertheless, it was aware that it had behind it the Catholic sentiment of the masses, which had been proved in the Revolution against Joseph II, in the time of the French Directory, and again under Dutch rule. Moreover the party had a certain traditional interest in the social and economic life of the people, more especially of the rural classes, for both the aristocracy and the Church were landowning orders and were accustomed to the active discharge of landlords' duties; there was no agrarian discontent in Belgium when the French Revolution broke out. Again, there was a democratic tendency in the Flemish movement which began towards the middle of the nineteenth century, for it was an attempt to revive or create a Flemish culture as against the French culture of the upper classes, and as the French spirit was represented especially by anti-clerical Walloons an alliance between *Flamingantisme* and the Catholic Party was natural.

The opposition to the Liberal Education Act of 1879 strengthened the connexion between the party and the mass of the people, especially the Flemish-speaking peasantry. Priests and politicians urged the people not to send their children to the new State schools. Catholic schools, supported by voluntary contributions, sprang up everywhere, and in Flanders these were attended by eight children out of ten. The Catholics, having decisively beaten the Liberals in the elections of 1884, have since then remained in power.

The attention of the Catholic Party was drawn to the need of urban social reform by the great riots that broke out in the Walloon industrial region in 1886, and by the strikes, accompanied by more or less violence, in the following years. The party was the better able to apply here its traditional paternalism as the Walloon employers were for the most part Liberals. Besides, the Catholics recognized that the continuance of existing conditions in the industrial areas was favourable to the growth of an anti-clerical Socialism that was more dangerous to their party than Liberalism.

In its tenure of power during the last thirty years the Catholic Party has been active in legislating for the welfare both of the peasantry and of the urban working classes. It has also shown great energy in creating, developing, and directing popular associations of all sorts, some of them (for example the Raiffeisen banks) of considerable economic importance. It has besides done much for the claims put forward by the *Flamingants* on behalf of their language (for the history of these claims see pp. 280–5); but this did not stop the Flemish movement from continuing to take a very vigorous offensive against the French language and culture.

Meanwhile there have been conflicts between democratic and anti-democratic tendencies within the Catholic Party. An attempt to unite Catholicism with Socialism in a Christian Democratic Party was opposed by the ecclesiastical authorities, and suffered further from the Belgian system of proportional representation, so that though the movement seems to have been suited to conditions in the Flemish cities, it was represented in the Chamber of 1914 by only two members. But the less extreme democratic elements in the Catholic Party itself have had more success. When the Socialists set on foot a great agitation for universal suffrage (1891–2) the majority of the Catholics showed themselves ready for some widening of the franchise, and the law of 1893 has in fact proved extremely advantageous to them. And though from 1894 to about 1907 the Conservative forces in the party did much to check the development of its democratic side, this Conservative influence was weakening in the last few years before the war, and in the Cabinet of Baron de Broqueville (1911–14) more or less democratic tendencies were predominant.

In its social and political work the party has derived much assistance from the ecclesiastical authorities throughout the country. The main strength of the Catholic electorate has continued to lie in the Flemish-speaking rural population. In 1913 the Catholics in the Senate numbered 70 out of 120, and in the Chamber of Representatives 101 out of 186. In 1914 there were 99 Catholics in the Chamber.

The present Belgian Labour Party was organized in 1885 on the basis of Socialist principles. The conditions of life and labour in the Walloon industrial areas were such as to provoke discontent, and Socialist propaganda reinforced by an economic crisis made that discontent break out in the great strikes of 1886. The Socialist Party made rapid progress in the towns, strengthening its influence through co-operative stores and other associations. By political strikes it brought the franchise question into prominence, and it replied with strikes to Conservative opposition in the Chambers. In the first elections under the Franchise Law of 1893 the Socialists, though formerly unrepresented, won 29 seats out of 152. But the Catholics under the new system steadily kept up their majority, and the Socialists claimed that this was due to the plural voting system. They agitated for the single-vote suffrage, and again organized political strikes. But that of 1899 only led to the introduction of proportional representation, which was more favourable to the Liberals than to the Socialists, and that of 1902 had no result. In April 1913 there was a general strike for the equal suffrage, and by this time a group among the Catholics favoured the dropping of the plural voting system. Yet all that the Socialists obtained was the Government's consent to appoint a commission on the system of voting for provincial and communal elections, and a promise that if the commission made a suggestion applicable to electors for the Chambers, the Government would allow it to be discussed.

Since 1894 the Socialists have hardly increased their strength in the Chambers. In 1914 they had 40 representatives out of 186, or nearly 22 per cent., whereas in 1894 they formed about 19 per cent. of the Chamber. Their leaders have set themselves to attain their ends gradually and by way of parliamentary action. But their political strikes, their anti-clericalism (although this has been fairly moderate), the activity of the Catholic Party in social work, and the plural voting-system have apparently contributed towards keeping down their numbers. Their main strength has lain in the Walloon manufacturing and mining districts. They have not had the full support of trade-unionism in the country owing to the competition of Catholic and Liberal unions, but they have done much work in organizing associations for mutual benefit, and especially co-operative stores (e.g. the *Vooruit* at Ghent and the *Maison du Peuple* at Brussels) which help to maintain various workmen's clubs for educational and social purposes.

12. THE POLITICAL POSITION OF BELGIUM IN EUROPE, 1839–1914

From 1839 to 1870 Belgium was still for Europe primarily a barrier against France. Several incidents illustrate this.

In 1842 the French Government welcomed a Belgian proposal for a customs union. But Great Britain, regarding the scheme as a menace to Belgian independence, insisted that it should be dropped.

The danger from France continued to exist so long as

French policy was directed by Napoleon III, who had a tendency towards misapplying national traditions. As Prince-President in 1852 he entertained the thought of annexing Belgium, and the British Government sent him a warning on the subject. In 1866 he reverted to the idea. Bismarck, in making preparations for his war with Austria, had done his best to keep the French Government quiet by offering it the prospect of territorial 'compensations'. He had indicated Belgium and Luxemburg as countries in which France might find her account. The hopes of the Emperor were floating uncertainly over the middle Rhineland, Belgium and Luxemburg, when Prussia won her decisive victory over Austria at Sadowa (July 3rd, 1866). The rapidity and completeness of the Prussian success had not been expected in France. The idea of a Germany united under Prussian leadership irritated and alarmed French opinion. Napoleon made haste to seek compensation for France. In July he demanded, and was refused, the cession of Mainz and a portion of the middle Rhineland. In August he caused his ambassador Benedetti to lay before Bismarck the drafts of two conventions—one of them permitting France to take Luxemburg, the other, very secret, arranging for a French occupation of Belgium with Prussia's support. Napoleon wished to take his stand 'boldly' on the ground of the principle of nationality. 'A Belgian nationality does not exist.' Bismarck kept the draft of this proposed convention, but answered evasively. Then, as Prussia's position in Germany became consolidated, he let the matter drop.

In 1870, after war had broken out between France and Prussia, Bismarck published the draft of 1866. Thereupon Mr. Gladstone's Government concluded separate treaties with France and Prussia, in which each of the belligerent governments affirmed its intention to respect Belgian neutrality, and pledged itself to join Great Britain in defending that neutrality in case it should be violated by the other belligerent power (treaties of August 9 and 11). It may be observed that these parallel treaties do not supersede the treaty of 1839, but specially insure its observance for a particular period, namely, the duration of the war and twelve months after the conclusion of peace. The preamble to each of the treaties of 1870 declares that this agreement, ‘ without impairing or invalidating the conditions of the said Quintuple Treaty (of 1839), shall be subsidiary and accessory to it ’, and by Article 3 it is arranged that, at the end of the period for which this special agreement is to hold good, ‘ the Independence and Neutrality of Belgium will, so far as the High Contracting Parties are respectively concerned, continue to rest as heretofore on Article 1 of the Quintuple Treaty of 19th April, 1839 ’.

The issue of the Franco-German War (1870–71), in changing the relations between the Great Powers, changed also the position of Belgium in Europe.

German policy now regarded France as an irreconcilable enemy to be kept down only by the threat or the use of force. So long as the French were not helpless before Germany the future of Germany seemed insecure. But that France should be reduced to helplessness was clearly not to the interest either of Great Britain or of Russia. In 1875 a German threat to force a quarrel on France, and establish by another war a decisive predominance over her, caused the British and Russian Governments to send to Berlin warnings by which ‘ peace was assured ’. After some years of uncertainty, the attitude of Russia became fixed. From 1887 onwards there was a Franco-Russian *entente* ; in 1893 there was a formal Franco-Russian alliance. Thus the Germans came to reckon on war with Russia at first as a probable, and then as a practically certain, accompaniment to war with France.

This settled the fate of Belgium. Russia had great potential military strength, but she would be slow in developing it. It seemed necessary, therefore, that Germany should first crush France completely by a very rapid blow, while Austria-Hungary (the ally of Germany from 1879 onwards) kept Russia in play till the German offensive, having finished its business in the West, could be diverted eastwards. In this plan it appeared essential that the German attack on France should be delivered and pushed home with all possible speed. The German armies would be in great numerical superiority to the French. But France very strongly fortified her eastern frontier between Verdun and Belfort. Therefore the Germans decided to realize the advantage of their numbers and their power of rapid movement by a sweep round through the Belgian plain on to the French northern flank.[1]

The violation of Belgian neutrality might indeed bring Great Britain into the war, but in the first place it was hoped that German diplomacy might keep her out of it, and at any rate, owing to the smallness of her army, her intervention could not seriously hinder the defeat of France.

On the other hand it was to the interest of France, her forces being numerically inferior to those of her enemy, that the fighting front should be as much restricted as possible. It was clearly not to her advantage that Belgian neutrality should be violated.

The earlier development of the German plan of campaign seems to have been marked by a change in the attitude of the German General Staff towards the fortification of the line of the Meuse in Belgian territory. For about twenty years from 1855 onwards the Prussian military authorities had urged the Belgian Government to fortify that line in view of a possible French offensive against North Germany. But when, in 1887, the fortification of the Meuse crossings at Liége and Namur was actually carried out, the German Higher Command showed itself very little pleased that its former advice had been followed. At the beginning of the present century the construction of strategical railways on the German side of the eastern Belgian frontier gave another indication of Germany's intentions. By 1906 those intentions had been so far revealed as to lead, in that year and again in 1912, to communications between the British and Belgian staffs with regard to the military situation that would result from a German invasion of Belgium. This precaution was justified by Belgium's obligation to defend her neutrality—the same obligation which covered the definite military convention secretly concluded in 1831 between the Government of Leopold I and four of the Great Powers (among them Prussia) in view of the danger then apprehended from France (see p. 149).

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[1] Herr von Jagow, the German Secretary for Foreign Affairs, put this calculation quite simply before the British Ambassador at Berlin on the afternoon of August 4th, 1914. British Blue-Book, no. 160.

The problem of national defence in Belgium had for long been a difficult one. The Belgians were a people without national military traditions. The neutrality of their State encouraged among them the idea that any high degree of preparedness was unnecessary. Further, the objection could easily be raised, both within and without the kingdom, that the Government's proposals for an increase of military strength were imperilling Belgian neutrality or were even being made in an unneutral spirit. The Socialists were generally anti-militarist, and the question of military service caused internal dissensions in the Catholic and

Liberal parties. A group of Catholic Conservatives, who admired Germany as an authoritarian State, and disliked French anti-clericalism, resisted action which seemed grounded on a fear of German intentions. Meanwhile, the German Government from time to time made public professions of innocence. Thus Belgian Cabinets for long found themselves obliged to keep the army at low strength. Voluntary recruitment was encouraged in order to lessen as far as possible the need for compulsion. The military law of 1912, however, provided for an increase in the numbers of the army. Still, in 1914, the German Staff was justified in considering that Belgium could not be a serious barrier to a German invasion of northern France.

From the last years of the nineteenth century the situation was complicated by the growth in Germany of so-called Pan-German ideals of aggression. It is obvious what military and naval, commercial and industrial advantages the Germans might hope to derive from the permanent control or annexation of the southern Netherlands. It cannot be told how far the Imperial Government's intentions with regard to Belgium were infected by Pan-Germanism before the war. It seems likely that the authorities in Berlin were ready to go as far in this direction as they could, and by such steps as circumstances might make advisable.

German references to the southern Netherlands as long-lost parts of the Holy Roman Empire are, of course, mere appeals to German sentimentality, which is easily roused by such rhetorical devices. More interesting is the relation of the Flemish movement to German ambitions.

The Flemish movement (for details see Chap. VI) dates from the thirties and forties of the last century. In earlier times, a certain vague and generally latent antipathy between Flemings and Walloons had expressed itself in uncomplimentary proverbs, and may have occasionally stimulated actions due primarily to quite different causes. But there was no sustained, self-conscious feud between the two peoples, and they had found no difficulty in living together within the same political unit. By 1830 the culture of the upper classes in Belgium had long been French, and Flemish was little more than a *patois* in use among the masses in the northern half of the country. But then, as with the growth of democratic feeling the populations of Europe were acquiring greater self-consciousness and pride in their peculiarities, the Flemings began to take an interest in their language and their distinctive characteristics. It has been already mentioned (p. 159) that the Flemish movement received an impetus from religious and social antagonism to French influences. This antagonism grew continually deeper with the embitterment of religious and social strife in Belgium, and was not weakened by the concessions made to demands for the official and educational recognition of the Flemish language. Indeed, there seemed to be some danger that Belgian nationality might not stand the strain that was being put upon it. On the other hand, there was no appreciable movement on the part either of the Flemings or of the Walloons towards political union with other states. The Flemings had no wish to join the Dutch, from whom they were divided by religious and other moral barriers. And if *flamingant* writers sometimes referred to Germany as the Greater Fatherland, and so forth, such expressions seem to have had no political significance. The Flemings had really no traditions attaching them to modern Germany, and they were fighting their own battle. On the other hand, the way in which the Germans have patronized the Flemings since 1914 suggests that before the war German diplomacy had regarded *flamingantisme* with approval, as dividing the Belgian people, as fostering anti-Gallicism and developing in the Flemings their Teutonic affinities, and as affording an excuse for bringing at least northern Belgium (including Antwerp, a principal centre of Flemish feeling) under German control. But in the past the Flemings have shown themselves bitterly resentful of foreign interference with their interests and their established liberties, and their experience of Germany during the past three years seems to have turned them definitely against her.

The account of the distribution of languages in Belgium, given in Chap. III, shows that the mass of Flemings live apart from the Walloons, and that only in certain cities such as Brussels are to be found the special problems that arise from the interspersion of races in the same area. Thus the Germans have been able to introduce their new administrative divisions designed to separate Flemings from Walloons.

13. THE FORMATION OF THE BELGIAN FRONTIERS

a. The Southern (Franco-Belgian) Frontier

1000–1635.—In the eleventh century the territory of the Counts of Flanders reached as far south as the Canche and Bapaume. Farther east, the frontier of the empire ran along or near the present southern limit of the Department of the Nord and touched the Meuse near Fumay. In the valley of the Meuse from Fumay to Stenay there was a debatable borderland which later gradually defined itself in favour of France.

It has been mentioned above that when in the thirteenth century the French monarchy extended its power in the Netherlands, its main effort was directed against its own fief, Flanders.

By 1305 the limits of the county had been pushed back to the Lys; Arras and the Artois and the French-speaking districts of Lille, Douai, and Orchies had been taken from it, and it had lost the homage of the county of Boulogne.

But this French progress was followed by a disastrous retreat. At the end of the fourteenth century the House of Burgundy held the Artois and the French-speaking Flanders, and in 1435 acquired the counties of Boulogne and Ponthieu, and the greater part of Picardy, including the towns on the Somme (Abbeville, Amiens, Péronne, and St. Quentin), and the lordships of Montdidier and Roye farther south. The Burgundian power now reached to the southern limit of the present department of the Somme.

The situation was intolerable for the monarchy. After the death of Charles the Bold it won back the lands in Picardy as well as Ponthieu and the Boulonnais, but did not establish its hold on Artois and French-speaking Flanders. The Habsburgs now occupied the Netherlands, and France attacked them, but in the sixteenth century she made no headway in this direction. In 1526 and 1529 (by the Treaties of Madrid and Cambrai) she gave up her claims to feudal superiority over Flanders, Artois, and the former French enclave of the Tournaisis. On the other hand, Philip II of Spain, in spite of his invasions and victories in northern France, would not or could not extend his territory here, and no serious change was made in this quarter till the great French advance in the seventeenth century under Richelieu, Mazarin, and Louis XIV.

1635–1714.—When the French advance began the southern boundary of the Netherlands was as follows: from Gravelines on the coast (Spanish) it ran southwards, leaving St. Omer and Hesdin to east. Near Hesdin it turned eastwards, and leaving Bapaume, Le Cateau-Cambrésis, and Landrecies to north, and

Le Catelét and Rocroi to the south, it reached and crossed the Meuse at Fumay. Thence it bore south-east, and ran, much as it does at present, a few miles east of the Meuse, till at Mouzon near Sedan it met the northern extremity of Lorraine. In this part of the Meuse valley the principality of Sedan had lost the independence it formerly claimed, and in 1642 escheated to the French Crown. Moreover, on the other side of the frontier, the Duchy of Bouillon was held by the French owners of Sedan from 1591 to 1642, and was later in dispute.

In the various treaties which altered this frontier between 1635 and 1713 the main object of the French was to obtain good positions for the defence of France or for future offensives in the Netherlands. Part of the territory which they acquired consisted of mere enclaves in the Netherlands, each containing a fortress with a *rayon* calculated to the artillery of the period.

At the end of the long series of wars[1] which closed

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[1] The details of the French gains and losses in this period are as follows:

By the Treaty of the Pyrenees in 1659 Spain ceded to France Gravelines, Bourbourg, and St. Venant in Flanders; the greater part of Artois (including Arras, Bapaume, St. Pol, Hesdin, Thérouanne, and Béthune, but not including St. Omer and Aire); Le Quesnoy, Landrecies, and Avesnes in Hainault; the Spanish fortresses of Mariembourg and Philippeville within the Bishopric of Liége; and Montmédy and Thionville in Luxemburg. In the neighbourhood of Montmédy France acquired Stenay and Jametz in Lorraine.

To England at this time Spain ceded Dunkirk; it was purchased by France in 1661.

By the Treaty of Aix-la-Chapelle in 1668 France won a large number of towns in Flanders and Hainault; in Flanders, Bergues St. Winoc, Furnes, Armentières, Lille, Courtrai, Douai, Tournai, and Audenarde; in Hainault, Condé, Ath, Binche, and Charleroi In Lorraine she took Longwy.

By the Treaty of Nimwegen in 1678 France surrendered her in 1713 and 1714 with the Treaties of Utrecht, Rastadt, and Baden, France stood on practically the same frontier as now divides her territory from that of Belgium. She had won Artois and much of southern Flanders and Hainault; she had advanced down the Meuse valley from Fumay to Givet. Higher up that river she had acquired Stenay in Lorraine and pushed eastwards to Montmédy and Philippeville. Further, in what is now Belgian territory she held the fortresses of Mariembourg and Philippeville as enclaves, and east of the Meuse she was in possession of the Duchy of Bouillon. It was much, but it left her a frontier in the middle of the Belgian plain, and it was not all that Vauban had thought essential. He had insisted that for the minimum of security Ypres, Courtrai, and Mons must be in French hands. But such as the frontier was, its defence was elaborately organized by Vauban and his successors. A great barrier of French fortresses stretched from the sea to the Ardennes. On the other hand the late opponents of France were anxious to take precautions against her breaking out again. The Dutch Barrier fortresses in the now Austrian Netherlands (see p. 132) were Furnes, Fort de Knocke,

advanced positions of Courtrai, Audenarde, Ath, Binche, and Charleroi. But she received St. Omer and Aire, thus completing the conquest of Artois, and also gained Cassel, Poperinghe, Ypres, Bailleul, and Warneton in Flanders, Cambrai, Valenciennes, Bavai, Maubeuge in Hainault, and Charlemont (Givet) on the Meuse in the county of Namur. Further, the Duchy of Bouillon had in 1676 again passed into French hands, and was thenceforward reckoned as a French possession.

By the Treaty of Ryswick in 1697 France had to agree once more to the cession of Courtrai which she had recovered in defiance of the Treaty of Nimwegen, and to surrender Luxemburg and Chiny which she had occupied.

By the Treaties of Utrecht, Rastadt, and Baden in 1713 and 1714 France gave up some of the places won in 1668 and 1678: Furnes, Ypres, Poperinghe, Warneton, and Tournai.

Ypres, Warneton, Menin, Tournai, and Namur, while there was to be a Dutch contingent in the garrison of Termonde. Other places, such as Mons, were left to be defended by the Austrians. Great Britain insisted that at Dunkirk (which had been a nest of commerce-raiders during the recent wars) the French should demolish their fortifications and fill up their harbour. This clause of the Treaty of Utrecht remained in force till 1783.

From 1714.—The successful French campaigns in the Belgian provinces during the War of the Austrian Succession (1744–8) did not lead to any changes in this frontier. But the French Revolution swept it away altogether, and it did not re-appear till 1814.

In the discussions on the Treaty of Paris of 1814, between the Allies and the restored French monarchy, this French commissioner was instructed by his Government 'to procure for France the points necessary to complete her system of defence'. This meant a line from the North Sea at Nieuport passing by Dixmude, Ypres, Courtrai, Tournai, Ath, Mons, Namur, Dinant, Givet, Neufchâteau, Arlon, and continued to the Rhine by Luxemburg, Saarlouis, and Kaiserslautern. But the Allies were anxious to make their new kingdom of the Netherlands a reliable barrier against another French advance towards Antwerp and the Rhine, and the result was that the old eighteenth-century frontier was restored from the sea to Quievrain (near Valenciennes), while between Quievrain and Bouillon a line was to be drawn which should pass south of Mons and Charleroi, but should leave Philippeville and Mariembourg to France, and east of the Meuse should include the northern part of the Bouillon Duchy.[1] On the rest of the Duchy, the succession to which was in dispute, the Allies would adjudicate later.

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[1] This line was to leave to France the cantons of Dour, Merles, Beaumont, Chimay, Walcourt, and Florennes west of the Meuse, and those of Beauraing and Gedinnes east of the Meuse.

The return of Napoleon and the campaign of Waterloo brought the Allies back to Paris in 1815. The Prussians now rancorously demanded considerable cessions of French territory as penalties and as guarantees. In this they were followed by the smaller German States. Austria took the same line, but half-heartedly. The British plenipotentiaries, Castlereagh and Wellington, were very anxious that France should neither be uselessly exasperated, nor so weakened as to cease to be a Great Power. The Tsar, Alexander I, agreed with this view, and Great Britain and Russia prevailed. As regards this frontier the Prussians proposed that France should cede her fortresses in French Flanders and at other points. In the end, however, by the Treaty of Paris, of November 20, 1815, the old frontier was restored, without the modifications which had been made in favour of France in 1814, and with the surrender by France of her former enclaves of Philippeville and Mariembourg, which were incorporated in the kingdom of the Netherlands and are now Belgian. The Duchy of Bouillon was joined to Luxemburg and is now Belgian territory. Part of the indemnity imposed on France was assigned to the kingdom of the Netherlands, to be spent in the construction of fortresses under the direction of the Powers.

The line of the frontier, as fixed by the Treaty of Paris of 1815, was not affected by the creation of the kingdom of Belgium in 1831, and has remained unaltered.

France in 1831 succeeded in obtaining from the Powers the demolition of certain Belgian fortresses, but others Belgium agreed to maintain so far as might be in accordance with the obligations of her neutrality. In 1855, on military grounds, this defensive system was given up by the Belgian Government.

b. The Northern (Belgo-Dutch) Frontier

1609.—When the revolt of the Netherlands came to an end in 1609 with the Twelve Years' Truce, the Spaniards were holding all Flanders up to the southern side of the Scheldt estuary, nearly all Northern Brabant between the mouth of the Scheldt and the lower Meuse, and southern (or upper) Gelders on the line of the lower Meuse above Grave. Higher up that river they were in possession of all the Duchy of Limburg, with the important fortress of Maestricht.

In face of this Spanish frontier the Dutch felt themselves insecure. In their campaigns between 1621 and 1648 they pushed it back all along the line, and in the Treaty of Münster (1648) they consolidated their gain.

1648–1714.—By the Treaty of Münster the Dutch gained ground on the Scheldt, in North Brabant, and on the lower Meuse.

South of the Scheldt they acquired a strip of the North Flemish coast, including Sluys, Sas van Gent, Philippine, Axel, and Hulst, and known as Dutch Flanders. They held the fort of Lillo on the right bank of the Scheldt, only a few miles below Antwerp, and the fort of Liefkinshoek opposite Lillo was ceded to them in 1664. The Treaty of Münster declared the closing of the Scheldt to all but Dutch shipping.

On the line of the Meuse most of southern Gelders was left to Spain, but her power of offence on this side was much weakened by the Dutch acquisition of Maestricht, together with a considerable part of Limburg.

The territories acquired by Holland between 1621 and 1648 (with the exception of Dutch Flanders) were, and still are, inhabited by a predominantly Catholic population. They were not admitted to the position of States within the Union, but under the name of Lands of the

Generality were administered as the common possession of the whole Union.

The history of this frontier since 1648 has turned principally on the questions of the Scheldt and the line of the Meuse.

1714–95.—With the transference of the southern Netherlands to Austria in 1714, southern Gelders was broken up. The larger and northern part, including the town of Gelders, went to Prussia, which was in possession of the neighbouring territory of Cleves. The Dutch took Venlo, and Austria an enclave at Roermonde.

In 1784 Joseph II tried to force the Dutch both to open the Scheldt and to acknowledge his sovereignty over Maestricht which they had promised in 1673 to cede to Spain in return for help against France, but had nevertheless retained. In the end the Scheldt remained closed, but the Dutch gave up the forts of Lillo and Liefkinshoek; and the Emperor gave up his claim to Maestricht in return for a monetary compensation (Treaty of Fontainebleau, 1785).

1795–1814.—On the annexation of the Austrian Netherlands to France the French made some alterations on this frontier.

In 1795 they obtained from Holland (then the Batavian Republic and under French protection) the whole of Dutch Flanders and also the right to garrison Flushing. Further, the Scheldt was to be opened. On the line of the Meuse France received Venlo, Maestricht, and Dutch Limburg; these, together with the northern part of the old episcopal state of Liége, went to make up the new French department of Meuse Inférieure.

In 1810 the annexation of southern Holland to France destroyed this frontier, the line of which was only partially preserved in the new departmental boundaries.

In 1814 the kingdom of the Netherlands was created, comprising both Holland and Belgium. It was divided into a number of provinces, of which the northern corresponded to the provinces of the old Dutch Republic, or, as North Brabant, to a part of the old Generality. But the southern provinces of the new kingdom simply reproduced the French departments, except where they were affected by the restoration of the old boundary lines of Holland. Thus while Dutch Flanders reappeared as a part of Zeeland, and North Brabant was revived in the form of a province, what was now the new province of Limburg was the department of Meuse Inférieure under another name.

The definition of the present frontier.—On the outbreak of the Belgian revolution in 1830 the leaders of the movement would have liked to see the new Belgium in possession of all the territory that lay between the lower Meuse and the coast of Flanders. At any rate, they could put forward a strong claim to Dutch Flanders and Limburg, for here (though a Dutch garrison still held out in Maestricht citadel) the revolution had already been successful and had been generally approved and supported by the inhabitants, when the Powers imposed an armistice (November 1830). But the conference of the Powers at London declared for the Dutch Frontier of 1790 as the basis for a settlement, and on this basis, in spite of Belgian protests (see p. 147) a definite arrangement was made. This, embodied in the Twenty-Four Articles of October 1831, the Belgians were forced with much reluctance to accept (November 15, 1831).

By this arrangement Dutch Flanders was to go to Holland, and the Dutch were empowered to levy dues on the navigation of the Scheldt estuary. Limburg was divided between Holland and Belgium; Holland received the northern part of the province as far south as Stevensweert, the southern part east of the Meuse, and the town and fortress of Maestricht; Belgium received the southern part west of the Meuse with the exception of Maestricht. Thus the south side of the Scheldt estuary and the fortress of Maestricht were to go to the State which was the less accessible to French influence.

The refusal of the King of the Netherlands to give his adherence to the Twenty-Four Articles left all Limburg to Belgium until 1838. The king then accepted the conditions to which Belgium had already agreed seven years before. The Treaty of April 19, 1839, between Belgium and Holland conformed to the Twenty-Four Articles in the definition of the frontier. Details were arranged by the Treaty between Belgium and Holland of November 5, 1842, and by the Boundary Convention of August 8, 1843. The Belgians were very sore at having to carry out the surrender of Limburg (see further, p. 148).

In 1863 the Dutch right of levying dues on shipping at the mouth of the Scheldt was bought out by the Belgian Government and the Powers interested in the navigation of that river.

The Belgians have wished to make the lower Meuse an outlet for the industrial districts lying on their part of that river: but the Dutch, by refusing to canalize the stream between the Belgian frontier and Venlo, have prevented Liége from becoming a port for sea-going steamers. The Belgian Government has offered to bear the cost of canalization from Visé to Venlo, but the offer was rejected.

c. *The Eastern Frontier of Belgium*

Northern section: the frontier between Belgium and Germany.—Until 1795, parts of the Duchies of Limburg and Luxemburg lay some distance beyond the present

Belgian frontier, among various imperial territories not in Habsburg possession. To the east their most important neighbours were the Duchy of Jülich and the archiepiscopal State of Treves, which, in the eighteenth century, included the abbey-lands of Prüm. To the west, the territory of Stavelot, ruled by prince-abbots, included Malmédy.

On the annexation of the southern Netherlands by France (1795) the department of Ourthe was organized here. Its eastern boundary followed approximately the old borders of Limburg and Luxemburg, taking in Eupen, and farther south Schleiden, Cronenburg, and St. Vith. The line of this boundary was very irregular, forming long salients eastwards.

In 1815, by the final Act of Vienna, Prussia, which was being placed in occupation of all the country between the new kingdom of the Netherlands and the Rhine, was here assigned the eastern portion of the late French department of Ourthe. She was to have the following cantons of that department: St. Vith, Malmédy, Cronenburg, Schleiden, Eupen; and she was also to receive in the canton of Aubel the advanced portion of that district lying south of Aachen.

In this way her frontier was straightened out into its present shape. The arrangement gave her some thousands of Walloons in the district of Malmédy. Since 1876 the Prussian authorities have done their best to stamp out the French language in and round Malmédy, but they have not yet succeeded. There are also a few German-speaking groups on the Belgian side of the frontier; for details see pp. 103–104, 85–88.

In the delimitation of the frontier the claims of Prussia and the Netherlands in ‘ the advanced portion ’ of the canton of Aubel could not be completely adjusted. Here an area of somewhat less than 1,400 acres in extent, containing zinc-mines, was left as neutral ground. From 1816 to 1841 this territory of neutral Moresnet was under the joint administration at first of Prussia and the Netherlands, and then of Prussia and Belgium. In 1841 the territory was given self-government; for details see note at the end of this chapter. The profits of the customs were divided between Belgium and Germany, to the advantage, it is said, of the latter.

Southern section: frontier between Belgium and Luxemburg.—The circumstances under which, at the time of the creation of the kingdom of Belgium (1831–9), the western part of the Grand Duchy of Luxemburg, as constituted in 1815, was assigned to Belgium, while the eastern part remained as before a member of the Germanic Confederation with the King of the Netherlands as its Grand Duke, have been described above (pp. 144–8).

The division was a compromise. An attempt was made on the one hand to show consideration for Belgian claims to a country which had long been connected with the southern Netherlands and now wished to become a part of the new Belgian State, and on the other hand to recognize the dynastic interests of the House of Nassau and to keep the fortress of the Germanic Confederation at Luxemburg as secure as possible against French aggression.

Further, it may be noticed that the inclusion of Bouillon in the kingdom of Belgium by this same division was partly the result of the French Government's desire that, as a concession to public opinion in France, this former French possession (see pp. 171, 172 note, and 174) should not remain in obviously anti-French hands.

The conference of the Powers in London, by Article II in the Act of the Twenty-four Articles (October 1831) defined the present frontier by the course of roads and streams and by the mention of places to be left to west or east of the line. The delimitation commissioners were to adjust details to meet local needs.

The kingdom of Belgium and the King of the Netherlands as Grand Duke of Luxemburg finally accepted this line in the Treaty of April 19, 1839, which was recognized and guaranteed by the five Great Powers in the Treaty of London of the same date. Details of the boundary on the Bastogne–Arlon road were arranged by the Treaty between Belgium and Holland of November 5, 1842.

THE GRAND DUCHY OF LUXEMBURG

1. Luxemburg before the Creation of the Grand Duchy (963–1814)

Mediaeval Luxemburg was a fief of the Holy Roman Empire. Between the tenth and the fourteenth centuries its Counts acquired in the Ardennes a territory of considerable size, though poor and thinly populated. In 1308 a Count Henry of Luxemburg was elected emperor as Henry VII. During the fourteenth century and the early years of the fifteenth, the Luxemburg family was one of the most powerful in the Empire: several of its members occupied the imperial throne, and the kingdom of Bohemia and other territories fell into its possession. In 1354 the Emperor Charles IV, who belonged to this family, raised the county of Luxemburg to the rank of a duchy. But the Luxemburg interest in the Netherlands was gradually ousted by the House of Burgundy. In the fifteenth century Philip the Good of Burgundy, partly by purchase and partly by force, fastened his hold on the duchy (1443).

Thenceforward Luxemburg formed a part of that aggregate of territory in the Netherlands which passed from the House of Burgundy to the House of Habsburg, and in 1714 from the Spanish Habsburgs to the Habsburgs of Austria.

The Province of Luxemburg as constituted in the first half of the seventeenth century was of far greater extent than the present Grand Duchy. On the west it included the main part of the area covered by the modern Belgian province of Luxemburg. On the south it took in Montmédy, and on the south-east Thionville and some territory on the right bank of the Moselle. Eastwards it reached across the valleys of the Prüm and Kyll. To the north it comprised St. Vith.

The western part of this old province was inhabited by Walloons, the eastern by a population speaking a middle-German dialect. Social development was slower in this forest-country than in other provinces of the Netherlands (thus serfdom lingered on here for some time after it had died out elsewhere in the Low Countries), and the political sense was less keen (for example, Luxemburg took no part in the rising of the Netherlands against Philip II of Spain).

By the beginning of the fourteenth century Luxemburg was much open to French influence. The Count Henry who was elected emperor in 1308 had a close connexion with the court of Philip the Fair of France, and the French Government sought to use the county as a channel through which to extend its power in the Empire, and especially in the Moselle valley and Lower Rhineland. But under Burgundian and Habsburg rule Luxemburg was a part of that mass of hostile territory which in the fifteenth and sixteenth centuries menaced France on her northern and eastern frontiers. In the seventeenth century it became a principal object of French attack in the great counter-offensive directed against the Habsburg power by Richelieu, Mazarin, and Louis XIV.

For the direct passage of armies between North-Eastern France and the Lower Rhineland there were two lines of advance, the line of the Middle Meuse west and north of the Ardennes barrier, and the line of the Moselle between the Ardennes and the heights of the Hunsrück. The southern part of Luxemburg Province, with the fortresses of Montmédy, Thionville, and above all Luxemburg itself, covered the line of the Moselle, as well as the approach to that line through the 'Gap of the Meuse' between Verdun and Mezières. Moreover, these fortresses were on the flank of any advance to or from the Middle Rhine along the line Metz–Kaiserslautern–Mainz.

Montmédy and Thionville were ceded to France in 1659. But the French were particularly anxious to win Luxemburg, which lay in a position of great natural strength at the meeting-point of a number of important roads. In 1684 they took it, and Vauban fortified it elaborately. It was surrendered by the terms of the Treaty of Ryswick (1697), was again occupied by France during the war of the Spanish Succession, and again given up at the close of that war (1714). But though France failed to keep her hold on it, French military opinion bore emphatic witness to its importance. Vauban wrote in 1684, 'It is the finest and most glorious conquest the king has ever made, and will place our frontier in such a state that the Germans will never be able to attack the kingdom from that side.' He regarded it as one of the positions essential to the security of France.

In 1795 the duchy of Luxemburg, with the rest of the Austrian Netherlands, was annexed by the French Republic. The fortress of Luxemburg was taken after a siege of several months.

In the reorganization of the country introduced by the French, the main part of the duchy became the Department of Forêts. Its northern districts of St. Vith, Cronenburg, and Schleiden, were included in the Department of Ourthe.

The rule of the French Directory was quite as unpopular here as in other parts of the Southern Netherlands, and for the same reasons. For some time the peasants of the Ardennes kept up a guerilla warfare against the new order.

But here as elsewhere the administration improved under the Consulate and Empire, and in the end the French occupation of the country greatly strengthened French influences, especially among the upper and middle classes of the population.

2. The Origins of the Grand Duchy
(1814–39)

When in 1814–15 the Allied Powers constructed their new barrier against France by uniting the former Austrian Netherlands to Holland, a special position was given to Luxemburg. A Grand Duchy of Luxemburg was formed, comprising both the present Grand Ducal territory and what is now the Belgian Province of the same name. This state was to be a member of the Germanic Confederation, but its Grand Duke was to be the King of the Netherlands, William I, who belonged to the Orange branch of the House of Nassau. The succession to the Grand-Ducal sovereignty was to conform to the Nassau family compact; that is, in case of a failure of male heirs in the line of Orange-Nassau, the Grand Duchy would pass to the elder, 'Walramian' branch. (Treaty of May 31, 1815, between Great Britain, Austria, Prussia, and the Netherlands: Vienna Act, June 9, 1815.)

There were two reasons for this arrangement. The less important reason was the one explicitly stated: namely, that the Grand Duchy was to compensate the House of Nassau for the loss of four small German principalities, which were being ceded by the King of the Netherlands to Prussia. The more important reason was that the inclusion of the Luxemburg territory in the Germanic Confederation enabled the Powers to declare the stronghold of Luxemburg a fortress of that Confederation, and in this way, in effect, to hand it over to the keeping of Prussia as a *point d'appui* against France.

By the Convention of Nov. 8, 1816, between Prussia and the King of the Netherlands, Prussian troops were to form three-quarters of the garrison in the fortress of Luxemburg, and the remaining fourth was to be provided by the Netherlands. (As a matter of fact, the Government of the Netherlands did not furnish its quota, and the garrison was wholly Prussian.) The appointment of the military governor and commandant of the fortress was reserved to the King of Prussia, but the military command was not, in peace time, to restrict the sovereign rights of the King of the Netherlands in regard to justice, finance, &c.

Although the new Grand Duchy was thus in international law separated from the kingdom of the Netherlands, it was practically a part of that State between 1815 and 1830. In administration no distinction was made between Luxemburg and the rest of the Netherlands, and the Luxemburgers sent deputies to the Legislative Assembly of the kingdom. The inhabitants of the Grand Duchy shared in the Belgian opposition to the government of William I.

The great majority of Luxemburgers joined in the Belgian Revolution of 1830. Only the Prussian garrison prevented the capital from taking part in the movement. Delegates from the Grand Duchy sat in the Belgian National Congress, which declared Luxemburg to be a part of the Belgian State, without prejudice to the rights of the Germanic Confederation over the fortress. William I appealed to the Diet of the Confederation to uphold the Government in the Grand Duchy. But Austria and Prussia, the two States which controlled the Diet, found it necessary to take up the whole Belgian question in common with Great Britain, Russia, and France, and the fate of Luxemburg was thus left to the Conference of the Powers in London. An account has already been given of the compromise effected by the Conference of London, by which the western part of Luxemburg was joined to Belgium, the eastern (including the capital and fortress) remained a part of the Germanic Confederation under the rule of William I as Grand Duke. Prussia retained the right to garrison the fortress. In order to compensate the Germanic Confederation for the loss of western Luxemburg, the Dutch province of Limburg, while remaining under the sovereignty of William I, was brought into the Confederation.

The division of Luxemburg, as made by the Act of the Twenty-Four Articles of October 15, 1831, and ratified by the Treaty of London, April 19, 1839, attributed to the new, reduced Grand Duchy a territory whose inhabitants were all of German speech, except in two Walloon communes, while Belgian Luxemburg was wholly Walloon, with the exception of the small town of Arlon and a few villages where German was spoken. The partition, while it aroused great anger in the rest of Belgium, did not at the time correspond to the wishes of the Luxemburgers. It appears that the great majority of the German-speaking inhabitants of the country had no desire to remain either under the rule of William I or within the Germanic Confederation; they would have been content to be incorporated in Belgium, with which they had traditional associations. Their wishes were overridden by the Great Powers, chiefly in order that eastern Luxemburg might be kept in safe hands as a part of the defences of Germany against France.

3. The Grand Duchy, 1839–66

From 1839 onwards the Grand Duchy had its own administration, distinct from that of the Netherlands. In 1841 it received a much restricted constitution from William II, the son and successor of William I. In 1848, the year of revolution in Europe, a more liberal constitution, on the Belgian model, was granted, and in 1850 the King of the Netherlands, William III, appointed his brother, Prince Henry, to be his lieutenant in the Grand Duchy—a measure which yet further loosened the connexion between Luxemburg and the Dutch Government. The general political reaction which followed on the events of 1848 affected the Grand Duchy; in 1856, in conformity with resolutions of the Germanic Confederation, the Luxemburg Constitution was revised, and the powers granted to the Legislative Assembly in 1848 were much reduced. This revised Constitution remained in force so long as the Grand Duchy was a member of the Germanic Confederation.

As regards its position in international politics, the Grand Duchy gave no serious trouble to Europe for over twenty years. Prussia continued to occupy the fortress of Luxemburg, and by an agreement of 1856 the Government of the Netherlands surrendered the right, which it had in fact never exercised, to furnish a fourth part of the garrison. Of great importance was the entry of the Grand Duchy into the German Customs Union (February 8, 1842); thus began that close economic connexion with Germany which has been the making of the commerce and industry of modern Luxemburg. On the other hand, French influence became predominant in the Luxemburg railway system. In 1857 the Guillaume-Luxembourg Railway Company concluded an agreement with the Eastern Railway Company of France, by which the French Company was to take over the working of the Guillaume-Luxembourg lines. This agreement, however, was not ratified by the Luxemburg Government till 1865.

During this period the population of the Grand Duchy was on the whole content with its position. The Government of Prince Henry identified itself with the interests of the country, and was popular. The wish to be united to Belgium seems gradually to have weakened, though there were still Luxemburgers who fostered it. Since 1815 there had grown up in the country a very strong dislike of Prussia. In 1830–9 the Prussian troops in the capital had displayed their sympathy with the Dutch Government and their antagonism to the Revolution. Even the economic benefits which the garrison brought to the town of Luxemburg, though these helped to make the Prussians endurable, did not make them popular. Nor did the great majority of Luxemburgers feel any German patriotism: they had been too long separated from the life of the German people. The obvious advantages of the German Customs Union, though they came to be recognized, did not create that patriotism. Some sentiment for German speech and local traditions, as against French influences, was encouraged at this time by the clerical (Catholic) party in opposition to the pro-French Liberals. But it remains true that the

Luxemburgers did not share in the political enthusiasms of the German people. The Slesvig-Holstein question, for instance, aroused in the country only a fear that Luxemburg too might be successfully claimed by German patriots as a part of the Fatherland.

French influences remained very strong. The French language predominated in the administration; the forms of that administration were largely French (dating from 1795–1814); French culture prevailed among the educated classes. There was much political sympathy with France among the Liberals, some of whom would gladly have seen their country united to the French State. Yet the majority of Luxemburgers had no wish to be absorbed by France. They were satisfied with their quiet backwater in Europe. The Luxemburg national song, composed in 1859, summed up the general feeling of the people, 'Mir welle bleiwe wat mer sin' (We wish to remain what we are).

4. The Luxemburg Crisis (1866–7)

In 1867 a dispute arose over Luxemburg between France and Prussia, which nearly led to war and ended in the neutralization of the Grand Duchy under the guarantee of the Great Powers.

The French Imperial Government wished to obtain compensation for the aggrandizement of Prussia in Germany and for the unification of that country under Prussian leadership, Before the Austro-Prussian War of 1866 Napoleon III was encouraged by Bismarck to believe that Prussia would help France to get what she wanted. But since the defeat of Austria at Sadowa (July 3), Bismarck had definitely refused a French demand for Mainz and a part of the Middle Rhineland, and had shelved Napoleon's scheme of annexing Belgium. Since, however, he wished for time to consolidate

Prussia's new position in Germany, he still kept alive French hopes of obtaining Luxemburg.

The situation was complicated by the relation of Luxemburg to Germany on the one hand and the Netherlands on the other.

Luxemburg and Limburg had been parts of the Germanic Confederation. That confederation was dissolved by the Austro-Prussian war, and there was formed, under Prussian leadership, a new Confederation of Northern Germany, the southern boundary of which was to be the Main. The question arose, what was now to be the position of Luxemburg and Limburg? In the former, the Prussian garrison remained, representing a Confederation which no longer existed, and the *démarches* of the Luxemburg Government failed to elicit Prussia's consent to the withdrawal of her troops. Limburg since 1839 had remained, in its administration and in so far as concerned the political rights of its inhabitants, a part of the kingdom of the Netherlands. The Dutch Government was in great anxiety lest Prussia should now wish to detach Limburg from Holland, and incorporate it in the new Confederation of the North. On the other hand, the Dutch had no interest in Luxemburg, which was practically autonomous and connected with Holland only through the person of the King-Grand Duke. They were quite ready to let Luxemburg go, if they might thereby save Limburg. The Dutch made inquiries of Prussia with regard to these two territories (October 1866). Bismarck refused to declare himself. In February 1867, there began a campaign in the German press to prove that the union of Holland to Germany was just, inevitable, and advantageous to the interests of both countries. The Dutch Government, seriously alarmed, applied to Paris in order to discover what support it would be likely to obtain from that quarter. The French Government, counting on Bismarck's willingness to see it annex Luxemburg, replied that it was ready to obtain the renunciation by Prussia of all claims to Limburg, in return for the cession of Luxemburg to France. For that cession, moreover, France was ready to pay a monetary compensation. Meanwhile, the French Government, prompted by Bismarck, had already set on foot a movement in the Grand Duchy in favour of the French annexation. The general feeling in the Grand Duchy was one of perplexity and alarm. Union with France was not desired by the majority of the inhabitants, but most of them seem to have regarded it as a lesser evil than absorption in the German Confederation of the North.[1]

But now the German press began to protest against the rumoured intentions of France with regard to Luxemburg. German national feeling became excited ; Luxemburg was claimed as a part of Germany. The King of the Netherlands began to wish to have the express sanction of the Prussian Government to his bargain with France; otherwise, he feared, the transaction might lead to a war in which Holland would be involved. The King of Prussia, in answer to inquiries on the subject from the Hague, replied that before expressing his opinion he must know the views of the other Powers which had signed the treaties relating to Luxemburg. Though this answer was indecisive, the Dutch Government seems to have nearly conquered its fears, when an outbreak of feeling in Germany wrecked the whole affair.

On April 1 Bismarck was questioned (at his own instigation) in the Parliament of the Confederation of the North with regard to the affair of Luxemburg.

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[1] About this time the Luxemburgers adopted the habit of singing the line of the national song quoted above (' Mir welle bleiwe wat mer sin ') as, ' Mir welle jo keng Preise [Preussen] sin '.

He replied that the Government would not insist on the entry of Luxemburg into the Confederation; he informed the House of the answer given by the King of Prussia to the question which had been put to him with regard to the cession of Luxemburg to France; he concluded by expressing the hope that no foreign Power would disregard the rights of a German State and a German people. In the course of this debate the German parliament, though it passed no resolution, showed clearly its hostility to the Franco-Dutch bargain. Bismarck's last words were eagerly caught up. In both Germany and France public opinion was dangerously inflamed. Napoleon III complained bitterly that Bismarck had duped him. But the French Government believed that its army was not at the moment in a fit state to encounter Prussia and her Confederation single-handed. On the other hand, Bismarck did not think that the time had yet come for his French war.

The French Government declared its willingness to leave the matter in the hands of the neutral Powers. The latter were ready to mediate. The British Government would not have opposed the annexation of Luxemburg by France if this could have been managed without provoking war, and it was now anxious that the affair should be settled peaceably. Austria made a proposal by which Belgium should receive Luxemburg in return for the cession of a part of Belgian territory (including Philippeville and Mariembourg) to France. But Prussia received this suggestion coldly, and the Belgian Government cautiously refused the dangerous present, though some Belgian politicians were in favour of acceptance. Opinion in Luxemburg had so far changed since 1830 that the idea found there little support. It was felt that union with Belgium, while destroying the autonomy of Luxemburg, to which its inhabitants had become attached, would not give the country that security which it might hope to enjoy as a part of France.

Eventually, after great activity in favour of peace on the part of the neutral Powers, and especially of Great Britain, a conference met in London. The result was that the Grand Duchy was constituted a neutral State under the collective guarantee of the Powers. The Grand-Ducal sovereignty was to remain hereditary in the House of Nassau, under the same conditions with regard to the succession as had been laid down in 1815 and 1839. The Prussian garrison was to evacuate the fortress of Luxemburg, and the fortress was to be destroyed and was never to be restored. Limburg, released from the Germanic Confederation by the dissolution of that body, was to continue to be an integral part of the kingdom of the Netherlands. The treaty containing these provisions was signed on May 11, 1867. The Powers guaranteeing the neutrality of the Grand Duchy were Great Britain, France, Prussia, Austria, Italy, and the Netherlands.

There had been some reluctance on the part of the British Government to guarantee an arrangement which did not touch British interests so directly as the neutrality of Belgium. It was for this reason that the guarantee of Luxemburg was made 'collective', whereas the guarantee of Belgian neutrality had not been qualified by any epithet. On June 14, 1867, Lord Stanley, the Secretary of State for Foreign Affairs, thus interpreted the obligation of Great Britain with regard to Luxemburg: 'The guarantee now given is collective only. That is an important distinction. It means this, that in the event of a violation of neutrality all the Powers who have signed the Treaty may be called upon for their collective action. No one of these Powers is liable to be called upon to act singly or separately. It is a case, so to speak, of "limited liability". We are bound in honour—you cannot place a legal construction upon it—to see in concert with others that these arrangements are maintained. But if the other Powers join with us, it is certain that there will be no violation of neutrality. If they, situated exactly as we are, decline to join, we are not bound single-handed to make up for the deficiencies of the rest. Such a guarantee has obviously rather the character of a moral sanction to the arrangements which it defends, than that of a contingent liability to make war. It would, no doubt, give the right to make war, but it would not impose the obligation. That would be a question to consider when the occasion rose.'

On July 4, 1867, the Prime Minister, Lord Derby, said in the House of Lords: 'I can give no further interpretation of the Treaty than this—that as far as the honour of England is concerned, she will be bound to respect the neutrality of Luxemburg; and I expect that all the other Powers will equally respect it; but she is not bound to take upon herself the Quixotic duty, in case of a violation of the neutrality of Luxemburg by one of the other Powers, of interfering to prevent its violation—because we have only undertaken to guarantee it in common with all the other Great Powers of Europe. The integrity of the neutrality of Luxemburg must not rest upon the force of arms of any one of the guaranteeing Powers, but upon the honour of all the guaranteeing Powers together, upon the general obligation taken in the face of all Europe by all the signatory Powers; and if this neutrality should be violated by any one of them, then I say it is not a case of obligation, but a case of discretion with each of the other signatory Powers as to how far they should singly or collectively take upon themselves to vindicate the neutrality guaranteed.'

This interpretation was referred to by Sir Edward Grey in 1914 as giving the British Government's view of its engagements on behalf of the neutrality of Luxemburg. But in 1867 this doctrine was sharply criticized both at home and abroad as making the guarantee illusory. This criticism was especially lively in Prussia, which was then interested in the maintenance of Luxemburg's neutrality. Many continental publicists have regarded the 'collective' guarantee as indicating concerted action as the proper method of procedure, but as obliging each signatory Power to separate action if concerted intervention should be found impossible. This theory has never been recognized by the British Government.

5. The Political Position of Luxemburg in Europe, 1867–1914

The position of the Grand Duchy in Europe was profoundly affected by the Franco-German War of 1870, though no formal alterations were made in its status.

On the outbreak of the war both sides pledged themselves to respect the neutrality of Luxemburg. Strong French sympathies were displayed by the inhabitants of the Grand Duchy. The Luxemburg authorities were reported to have permitted French soldiers to pass through the Grand Duchy in order to rejoin the French forces. The French railway employés in the country succeeded in organizing trains to carry supplies from Luxemburg territory to Thionville, then besieged by the Germans. The German press complained loudly. Bismarck issued a Note (Dec. 3, 1870) charging the Luxemburg Government with unneutral conduct and declaring that 'the premises with which the Royal Government was obliged to connect the neutrality of the Grand Duchy no longer exist'. This Note seemed to foreshadow a German occupation of Luxemburg. It was followed by a demand for the surrender of the Luxemburg posts, telegraphs, and railways to Germany, and for the expulsion of the French vice-consul. The Luxemburg Government refused to concede the first point, but granted the second. To inquiries made by Great Britain as to Prussia's intentions—inquiries which were accompanied by a reminder that the neutrality of Luxemburg should, according to treaty, be dealt with by the common action of the signatory Powers—Bismarck replied that he did not intend to denounce the Treaty of 1867. The incident was closed.

But Germany used her victory over France to weaken French influence in the Grand Duchy, and to strengthen her own position there.

She obtained the cession of French territory on the southern Luxemburg frontier, with the result that thenceforward France touched the Grand Duchy on a front only about six miles wide in the neighbourhood of Longwy.

At the same time the Germans took from the French and transferred to themselves the right to work the Guillaume–Luxembourg railway line. Even after the Luxemburg Government had in 1865 (see p. 188) approved the agreement by which the French Eastern Company was to take over the working of this line, the unsatisfactory financial position of the Guillaume-Luxembourg Company had caused hesitation on the French side. But when in 1867 the Directors of the Guillaume-Luxembourg opened negotiations at Berlin, the French hurriedly came to terms, and a Convention of 1868 had settled the rights and obligations of the Eastern Company. The Germans now insisted that the French Company should surrender its rights (Treaty of Frankfort, Additional Article I), and a Convention between Luxemburg and Germany (1872; renewed in 1902) placed the Guillaume-Luxembourg line under German control, as part of the Alsace-Lorraine railway system, managed by an administrative commission at Strasburg.[1] Not till after the destruction of the fortress of Luxemburg had been declared complete by the Government of the Grand Duchy (1883) did Germany consent to the construction of a line giving direct communication between Luxemburg and Longwy (see p. 199).

The German Government had pledged itself by the Railway Convention of 1872 (Art. II) not to use Luxemburg railway lines for the transport of troops or munitions in time of war. But in the plan of the German General Staff for turning the French eastern frontier from the north, the occupation of the Grand Duchy, in order to use its means of communication, was bound to be an essential element. Only by the violation of Luxemburg's neutrality could connexion be maintained with the German armies which were to invade northern France by way of Belgium: and through Luxemburg lay the line of advance to the Gap of the Meuse, north of the Verdun-Toul defensive system. Like Belgium, therefore, Luxemburg, after being for long the object of French plans or campaigns, became, subsequently to the war of 1870, the destined road of German armies moving to attack France.

Between 1870 and 1914 the Grand Duchy prospered, especially from the development of its iron mines. The basis of its economic life was its membership of the German Customs Union.

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[1] The Guillaume-Luxembourg line comprises the two principal tracks in the Grand Duchy; one of these runs from north to south, connecting with Spa, Liége, and Aachen in the north, and Thionville and Metz in the south; the other passes from east to west, connecting with Trier on the east and Arlon and Namur on the west. Both these tracks pass by Luxemburg. Of the secondary lines in the Luxemburg railway system the most important were those of a Belgian company (Prince Henri).

As regards the attitude of the Luxemburgers towards their neighbours, the wish to be left as they were still prevailed.

Strong French sympathies were still displayed by a section of the population, chiefly belonging to the middle classes. But the spread of a belief in the military weakness of France made the prospect of union with that country seem very remote and the number of Luxemburgers who hoped for this union appears to have declined. Though the *Kulturkampf* in Germany (1874–1885) stimulated dislike of the German Government among the clericals, who had considerable influence in the rural districts, the subsequent political ascendancy of anti-clericals in France was yet more offensive to them.

Desire for union with Belgium seems in this period to have been confined to quite a small group, largely drawn from the official class.

There have been attempts on the part of pro-German Luxemburgers to develop German feeling in the country (especially through the *Deutsche Schulverein*), but these propagandists seem generally to have avoided declaring themselves in favour of political union with the Empire. The commercial element in the population could not but be sensible of the benefits which it derived from the economic connexion with Germany. But the great majority of Luxemburgers had still no political sympathy with the Empire, and Germans of the Empire were on the whole unpopular. Dislike of Prussianism remained strong.

6. THE FORMATION OF THE FRONTIERS OF THE GRAND DUCHY

a. The Southern Frontier of Luxemburg

The French conquests of the seventeenth century, by which France acquired Thionville from Luxemburg and Longwy from Lorraine, resulted in the drawing of the present Luxemburg frontier line from the neighbourhood of Longwy to the Moselle. This frontier, obliterated by the French annexation of Luxemburg in 1795, reappeared in the settlements of 1814 and 1815 (First Treaty of Paris, May 30, 1814; Second Treaty of Paris, Nov. 20, 1815). The subsequent treaties relating to the Grand Duchy of Luxemburg (April 19, 1839, and May 11, 1867) left this line unaltered.

The southern side of this frontier-line remained wholly French territory until 1871. By the Treaty of Frankfort (May 10, 1871) the Franco-German frontier was carried westwards, so as to start from a point on the Luxemburg frontier between Hussigny (French) and Redingen (German), so that henceforth the Grand Duchy marched on the south with the German Empire, except for a stretch about six miles long, in the neighbourhood of Longwy, between Hussigny and the Belgian village of Athus. The events which led up to this change belong to the history of Alsace-Lorraine.

For some years after the Treaty of Frankfort there was no railway communication between Longwy and Luxemburg except by lines passing through Belgian or German territory. In 1877 Germany objected to a project for a line directly connecting Longwy with Luxemburg, on the ground that the Luxemburg fortifications had not yet been completely destroyed (compare pp. 193, 197). After this ground of objection had been removed, a single-track line was laid between these two places, crossing the French frontier north of Saulnes.

b. The Eastern Frontier of Luxemburg

Up to 1795 the Austrian province of Luxemburg included a strip of territory on the right bank of the Moselle between Perle and the mouth of the Saar: east of the Sauer and the Our it took in the districts of Neuerburg and Bitburg: and to the north it comprised St. Vith, Cronenburg, and Schleiden. Its boundary between the Moselle and Schleiden ran in a very irregular line.

During the French occupation (1795–1814) the eastern borders of the Departments of Forêts and Ourthe preserved the trace of the old boundary of the province. The Neuerburg and Bitburg districts were included in Forêts, the St. Vith, Schleiden, and Cronenburg districts went to Ourthe.

When Prussia acquired the Rhineland in 1814, the frontier was here straightened out to her advantage. She took all the former Luxemburg territory east of the Moselle, the Sauer and the Our. The present frontier was laid down by the treaty of May 31, 1815, between Great Britain, Austria, Prussia, and the Netherlands, and by the Vienna Act of June 9, 1815. The line was not altered by the subsequent treaties regulating the status of the Grand Duchy (1839, 1867).

c. The Western Frontier of Luxemburg

The formation of this frontier has been described on p. 180.

7. THE CONSTITUTION OF LUXEMBURG

The Luxemburg Constitution of 1856 (see p. 187) had its origin in the movement of reaction which took place within the Germanic Confederation, as the result of the events of 1848–9. When the Confederation was dissolved in 1866, this constitution lost its *raison d'être*, and in 1868 was replaced by a more liberal one, which was maintained down to the outbreak of the present war.

The grand ducal office and the order of succession thereto are not derived from the will of the people. It has been mentioned above that in 1815 the Powers which then created the Grand Duchy declared the succession to the grand ducal sovereignty to be subject to the Family Succession Act of the House of Nassau: that is, in the case of failure of males in the Orange branch of that House, the succession would pass to the males of the elder 'Walramian' branch. Thus in 1890, when King William III of Holland died without leaving male heirs, the Grand Duchy went to Adolphus of Nassau-Weilburg, the representative of the elder branch, whose principality on the further side of the Rhine (the Duchy of Nassau, capital Wiesbaden) had been annexed by Prussia after the war of 1866. The successor of Adolphus in Luxemburg, the Grand Duke William, promulgated in 1907 a Family Succession Act, by which, in the case of his death without male issue, his eldest daughter Marie Adelheid was to succeed him as Grand Duchess, and was to be followed by her male descendants, or failing these, by her sisters and their male descendants, in order of primogeniture. The present sovereign is the Grand Duchess Marie Adelheid, born June 14, 1894.

By the constitution the legislative power resides with the Grand Duke and an elected Chamber of Deputies. The executive power is in the hands of the Grand Duke, who appoints the Ministry. The Council of State, appointed by the Grand Duke, has considerable influence over legislation and administration.

Both the Chamber and the Grand Duke have the right of initiative in legislation. All laws must be passed by the Chamber, and the budget of the State is submitted to it. The State finances are audited by a Chamber of Accounts, which is practically a committee of the Chamber of Deputies. In practice, though not in theory, the general support of the Chamber of Deputies is necessary to the Ministry.

The Chamber meets every year in a session which is not dependent on a summons from the Grand Duke. The sovereign can, however, prorogue or dissolve the Chamber, and can also summon it for extraordinary sessions. Deputies are directly elected, their number being proportionate to the population; before the war there were fifty seats. Elections for half the Chamber are held every three years. Every citizen over twenty-five years of age, residing in the Grand Duchy, paying 10 francs in direct taxes to the State, and not under the ordinary legal disqualifications, has a vote for the Chamber. By a law of 1906 the voter must have been assessed at the required amount of taxation a year before his name can be entered on the voting register. A revision of the register takes place every year. Any citizen over twenty-five, residing in the Grand Duchy and not under legal disqualifications, is eligible for the Chamber.

The Council of State consists of not more than fifteen members appointed by the Grand Duke. It discusses all proposals for legislation and can exercise over them a suspensive veto of six months' duration. It can suggest to the Ministry legislative or administrative measures, and the Ministry can consult it on any administrative question. A committee of seven of its members, appointed every six years partly by the Grand Duke and partly by the Chamber, is the final judicial court in all cases touching the powers of the administration or any part thereof. The Council of State has acquired a position of great influence in the political life of the Grand Duchy.

The Ministry consists of a President (Minister of State) and Directors-General of Departments. There are four Directories-General, one of which is usually held by the Minister of State: (i) Foreign Affairs, together with Justice, Commerce, Agriculture, and some other matters; (ii) Interior, comprising Local Government, Primary Education, Forests and Mines; (iii) Public Works (Railways, &c.); (iv) Finance. Ministers are appointed and dismissed by the Grand Duke. They can be impeached before the Supreme Court of Justice by the Chamber.

The system of local government is modelled on that of Belgium. The unit of local self-government is the *commune.* The communal authorities both administrate local affairs within their competence and are an organ of the Central Government. The Communal Government consists of a council, elected on a franchise which is almost the same as that for the Chamber of Deputies, and of a burgomaster and two *échevins,* who are appointed by the Central Government, the *échevins* being selected from the Council, but thereby losing their position as councillors. The Council determines policy, controls finance, and appoints communal officials. The burgomaster, assisted by the *échevins,* is the executive authority in purely communal matters, and is also responsible to the Central Government for the maintenance of order and the execution of laws and ordinances.

The *communes* are subject to a general control by the Central Government. In practice they enjoy a considerable amount of independence. The administration of communal property and finance, the undertaking and management of local works of public utility, the control of the police, the care of public health are within their province. Two or more *communes* may, with the permission of the Central Government, combine in a ' syndicate ' (formed for an undetermined or a limited period of time), in order to carry out any work that is in their common interest. The *communes* are grouped in districts, and the district commissioners are the connecting links between them and the Central Government.

In general it may be said that law and administration in Luxemburg are derived principally from French sources (in part directly, and in part through Belgium), but they also show the influence of traditions of the old provincial era, and of the later connexion of the country with Germany.

THE RHINELAND

1. From the Thirteenth Century to the French Revolution

a. The Imperial States of the Rhineland

Between Meuse and Rhine, and east of those lands which were ruled by the Burgundians and the Habsburgs, there lay a number of imperial states and territories whose connexion with the Holy Roman Empire was much more real than that of the Netherlands. The Empire in the later centuries of its existence has been described as a ' loose confederation ' of princes and cities, under the presidency of the Emperor. The amount of control which the Emperors were able to exercise over this ' confederation ' varied from time to time, but they never established an effective regular government. Any serious attempt to strengthen the imperial power broke on the opposition of the princes of the Empire—an opposition likely to be stimulated and supported by foreign powers. In the eighteenth century the imperial authority was a shadow. The Habsburg emperors were powerful in Germany, not as emperors, but in virtue of the great territorial possessions under their immediate rule. The members of the imperial 'confederation' were represented in a Diet (*Reichstag*), and from the sixteenth century onwards they were grouped in areas called circles (*Kreise*) for imperial, financial, and executive purposes. But the whole machinery of the Empire worked, at best, clumsily and feebly, and by the eighteenth century the Diet had become in effect little more than a diplomatic conference.

The principal States of the Rhineland, enumerated in order from north to south, were the following:

The Duchy (originally County) of Cleves, on both sides of the Rhine, about the towns of Cleves and Wesel.

The archiepiscopal Electorate of Cologne, the main part of which lay along the left bank of the Rhine from below Neuss to above Bonn.

The Duchy (originally County) of Berg, on the right bank of the Rhine opposite the Electorate of Cologne, including Düsseldorf, Solingen, Elberfeld, and Barmen.

The Duchy (originally County) of Jülich (French, Juliers) between the Electorate of Cologne on the east and southern Gelderland and Limburg on the west. It included the towns of Jülich, Düren, Remagen, and Sinzig.

The archiepiscopal Electorate of Trier (French, Trèves), along the lower Moselle down to Coblenz, and extending to the right bank of the Rhine opposite Coblenz.

The country between the Electorate of Trier on the north-west, Lorraine on the south-west, Alsace on the south, and the Rhine on the east does not fall within the area dealt with in this book. But it will be convenient to notice that the chief state here was the Electoral Palatinate, which extended also to the right bank of the Rhine. The archiepiscopal Electorate of Mainz (French, Mayence) lay principally east of the Rhine along the Main valley.

The secular states above mentioned had a history complicated by the vicissitudes of succession, by family partitions, by dynastic disputes and their consequences. The ecclesiastical electorates were ruled by their archbishops, who were elected by the cathedral chapters. In practice these elections were generally decided by extraneous political influences; their occupants usually belonged to German families of princely rank. From 1583 to 1761 the see of Cologne was monopolized by Bavarian Wittelsbachs.

Besides the principal States there were many smaller territories (down to estates comprising perhaps a village or two), whose rulers, secular or ecclesiastical—dukes, princes, abbots, counts, imperial knights—had no lord but the Emperor. Direct dependence on the Emperor came to mean practically independence, and was therefore a condition generally coveted and readily claimed by the smaller feudatories.

The towns in the Middle Ages fought and bargained with their lords for their autonomy, and they were the scenes of the usual mediaeval conflicts between urban oligarchies and the less privileged classes. By the eighteenth century the older towns had acquired different degrees of local self-government, but only two cities in the lower Rhineland—Aachen and Cologne—had successfully asserted and maintained an independent position as 'imperial' towns, subject only to the nominal authority of the Emperor.

In the mediaeval period some of the principal currents of European trade flowed through the towns of the Rhineland. Cologne, especially, was a great commercial and industrial centre. In the thirteenth century the Rhine cities formed a league which was of considerable importance in the politics of the Empire. But this combination failed to maintain itself, and as at the close of the Middle Ages and the beginning of the modern period the territorial authority of the greater princes became better organized and consolidated, the cities were more and more overshadowed, and sank at last into political insignificance. Further, the diversion of European commerce to new main routes, ill-considered acts of commercial jealousy on the part of the civic authorities, the ruin of the trade and industry of the southern Netherlands in the latter part of the sixteenth century, the Thirty Years' War, the wars of the age of Louis XIV and of the eighteenth century, all contributed to the decline of the towns of the lower Rhineland. In 1794, the greatest of them, Cologne, had only about 40,000 inhabitants, of whom 6,000 possessed civic rights.

In the Rhenish principalities the nobles, the clergy, and the citizens of the towns—at least two out of these three classes—were represented in Estates which on the whole exercised a considerable influence on the governments: especially, these assemblies had the right of granting taxation.

Not only did the Rhinelanders remain a part of the German people (in contrast to the Teutonic-speaking population of the Netherlands), but German civilization was at its strongest along the Rhine down to Cologne and Aachen, or at least it was nowhere stronger. Yet this was because the Rhenish Germans had since the fifth century been deeply imbued with Latin traditions and culture; and left in disunion by the decay of the Empire, exposed to French influences, and within the scope of French ambitions, they might all, in easily imaginable circumstances, have gone the way of the Alsatians.

b. The French Monarchy and the Rhineland

That the kings of France were the legitimate heirs of Charlemagne was a commonplace of French patriotism in the twelfth and thirteenth centuries; at least the country on this side of the Rhine clearly belonged to the French Crown, for against the Crown there was no prescription, and the old Carolingian claims to Lotharingia were still valid. At the end of the thirteenth century the expanding force of the French monarchy seemed to have the power and the will to restore the Carolingian tradition to practical politics. Philip IV pushed French influence in Germany, and especially in the Rhineland. He had his clients among the German princes, for example the Archbishops of Trier, Cologne, and Mainz; he hoped (as other kings of France hoped after him) to acquire the imperial crown. The rumour ran among his subjects that he was about to resume French sovereignty over all the imperial lands up to the Rhine, and even that the Emperor had signed a treaty ceding these lands to France.

After the death of Philip IV (1314), the feudal reaction and the English wars checked the expansion of France. Edward III of England tried to bring the Lower Rhineland into the great league which under his command was to attack France from the north, but, as has been already noticed (p. 118), this alliance proved ineffective.

By the time that the English danger had been repelled, the House of Burgundy was threatening France on her northern and eastern frontiers. The Burgundian dukes of the fifteenth century, Philip the

Good and Charles the Bold, looked forward to the inclusion of the whole Rhineland in the Burgundian territorial aggregate. The French monarchy, on its side, still on occasion alleging the ancient rights of the Crown of France to the territories *en deça la rivière du Rein*, gave open or covert support to the princes of the Empire who were menaced by Burgundian ambitions. These ambitions came to nothing. Charles the Bold, though he occupied Gelders, failed in an attack on the electorate of Cologne (1474), and was then diverted to his adventures in Lorraine, in Alsace, and against the Swiss—the adventures which proved his ruin.

The place of the House of Burgundy was taken by the House of Habsburg. In France the dangers on the frontiers became yet more formidable, and the pressure of this danger stimulated the French Government and people to a strong reaction. In the conflict with the Habsburgs the claims of France to imperial territory on this side the Rhine were continually urged by French publicists. While mediaeval history and legend were still used to support these claims, the classical culture of the age made especially popular the idea of restoring the boundaries of ancient Gaul as described by Caesar and maintained by the Roman Empire. The ideal of the Rhine frontier was accepted both by public opinion and by statesmen. It was at the back of all French action in the direction of the Rhine during the sixteenth and seventeenth centuries.

In the religious debate of the period the German Protestant princes were placed in antagonism to the Habsburgs, the champions of Catholicism. But the opposition to the Habsburgs in Germany did not arise only from the quarrel of the creeds. The difference of religion was usually the occasion or the pretext of disputes in which the dynastic ambitions of the princes or their fears of Habsburg imperialism were also involved: and, on the other hand, jealousy of the Habsburg power showed itself at times among Catholics as well as among Protestants.

This situation gave France her opportunities. She was the natural ally of the anti-Habsburg forces in the Empire, and especially therefore of the Protestants. For example, in 1540, in the course of the duel between Francis I and Charles V, the French Government formed an alliance with the Protestant Duke of Cleves, who tried to dispute the possession of Gelders with the Emperor. Twelve years later it was on the invitation of the princes of the Empire that the Government of Henry II undertook the expedition into Alsace and Lorraine which resulted in the acquisition by France of Metz, Toul, and Verdun (1552). The development of this success was impossible during the French Wars of Religion (1560–98); but in the first years of the seventeenth century a renewal of the advance to the Rhine was prepared by Henry IV, and then, after another period of delay, it was carried out by Richelieu and Mazarin.

In the first half of the seventeenth century the Austrian and Spanish branches of the Habsburg interest were standing together against the Protestants of Germany, to whose support there came, at one time and another, France, Holland, Denmark, and Sweden. If in this prolonged European crisis the House of Habsburg was to beat down the alliances formed against it and secure its supremacy in Europe, it was necessary that it should control the line of the Rhine; for only by that means could the resources of Spain in the Netherlands, in Franche Comté, and in Northern Italy, and those of Austria and her Bavarian ally on the Upper Danube, be used in effective combination against the enemy Powers. On the other hand, when France was able to act in Germany, her principal objects were to prevent the Habsburgs from extending their influence in the Rhinelands, to break up their positions here, and to establish her own supremacy in these countries.

Henry IV, at the end of his reign, prepared to set this movement on foot. He followed the traditional French policy of encouraging the forces of disunion in Germany: he set the princes of the Empire against the Emperor in the name of 'German liberties'. In 1609 a succession-dispute in the Lower Rhineland gave him an opening.

The Ardennes family of La Marck had acquired by marriages the Duchies of Cleves, Jülich, and Berg. The last prince of this house died childless in 1609. There were many claimants to the succession—among them the Hohenzollern Elector of Brandenburg and the Count Palatine of Neuburg, who belonged to a branch of the Wittelsbachs. These two princes, both of whom were Protestants, came to a provisional agreement by which they took possession of a part of the disputed territory, pending a final arrangement. But the Emperor, insisting on his right to dispose of the duchies and to keep them in his own hand until he had decided between the claimants, ordered both the Elector and the Count Palatine to withdraw and sent a force to occupy Jülich. It seemed that Austria meant to bring the duchies under her own control; but if the Habsburgs should establish themselves in this compact group of states on the Lower Rhine, their position here would be a menace both to the Dutch on the one side and to the German Protestants on the other, and would hinder co-operation between these two groups of their natural enemies.

Henry IV tried to make the affair the occasion for a general attack on the Habsburgs. His preparations for war were far advanced when he was assassinated

(1610). His great project fell to pieces, but he had so far committed France that after his death the French Government was bound to see that a compromise was reached in favour of Brandenburg and Neuburg. A French force dislodged the Austrians from Jülich, and the question was now limited to the adjustment of the Brandenburg and Neuburg claims. Then the Count of Neuburg turned Catholic to win the support of the Habsburgs, and the Hohenzollern advanced from Lutheranism to Calvinism in order to attract the Dutch to his side. The Treaty of Xanten (1614) assigned Jülich and Berg to the Count Palatine, and Cleves to the Elector. But the governments of the Habsburg Netherlands and of the United Provinces had sent troops to occupy different parts of the duchies, ostensibly in support of their respective clients, and long refused to evacuate the positions which they had seized. The Brandenburg-Neuburg dispute was renewed, and the matter was not finally settled till 1666, when the Treaty of Xanten was confirmed. The Dutch did not give up their fortresses in Cleves till 1672. Thus did the Hohenzollern make their first appearance in the Lower Rhineland.

In France the death of Henry IV was followed by a period of internal trouble and weakness, and it was not till 1633 that the French Government (directed by Richelieu) was sufficiently strong at home to be ready for a vigorous offensive against Austria and Spain combined. The Thirty Years' War had then run half its course. The struggle which had begun with the Protestant, anti-Habsburg rising in Bohemia, and the Elector Palatine's acceptance of the crown offered him by the Bohemian rebels (1618), had resulted by 1629 not only in the defeat of the Bohemian movement, but in the almost complete control of the Rhinelands by the Habsburg forces and in the ascendancy of the

Habsburg interest throughout Germany. But the Habsburg successes had alarmed even the Catholic princes of the Empire. It seemed to be the aim of Wallenstein, the Emperor's general, to make his master an Emperor indeed. The Catholic princes protested and obtained Wallenstein's dismissal (1630). Then came the intervention of Gustavus Adolphus of Sweden. Richelieu hoped to make Gustavus work for the King of France, and tried to combine Catholics and Protestants in Germany in an anti-imperialist league. But the victory of the Swedes at Breitenfeld, which was followed by their appearance on the Middle Rhine (1631), was a check to French policy. The King of Sweden now showed himself disinclined to submit to French direction, and it became clear that he and the German Catholics could not work together. Richelieu, however, was able to prepare the way for future action. The Elector of Trier, distrusting the Habsburgs and unwilling to surrender to the Protestant Swedes, was induced to place himself under the protection of the King of France, and granted the French the right of garrisoning the Rhine fortresses of Coblenz, Ehrenbreitstein, and Philippsburg. An attempt to bring the Elector of Cologne into a similar position of dependence on France was made and failed.

After the death of Gustavus Adolphus in 1632 the war went against the Swedes and their German allies, and France was able to take advantage of their distress to join in the conflict on her own terms. The French declared war in 1635. At first they were not fortunate, and the Electorate of Trier was occupied by the Spaniards, who sent the Elector himself a prisoner to Vienna. But the military power of France gradually developed. By the time of Richelieu's death (1642) the French Government had a firm hold on Alsace. By the end of 1645 the French armies were masters of the

Middle Rhine. The Emperor came to terms in 1648, and by the Peace of Westphalia the imperial rights in Alsace were transferred to the French Crown. The settlement in Germany was such as to confirm the defeat of Habsburg centralizing imperialism. The influence of France was predominant in the Middle and Lower Rhineland.

Ten years after the Peace of Westphalia the French policy of bringing the German princes under French control by making them see their interest in supporting the interests of France achieved a great success. In 1658, when it was apprehended that Austria might renew the war against France in alliance with Spain, Mazarin was able to bring about the formation of a league of imperial states, known as the League of the Rhine, to which France pledged her support. The object of this alliance, which included both Catholic and Protestant princes, was to prevent the Emperor from troubling the peace or encroaching upon 'German liberties'. The League of the Rhine was maintained after the war between France and Spain had been brought to an end (1659).

But the aggressive policy of Louis XIV broke up the League and drove most of its members on to the Habsburg side. France seemed no longer to protect but to threaten their 'liberties'. The French Government, on the other hand, in attacking Holland or the Emperor, tried to bribe or bully the small states west of the Rhine into taking the side of France or at least into giving passage to French troops. It generally had an ally in the Elector of Cologne, whose territories gave the French a convenient foothold on the Lower Rhine. The Elector of Trier, who was unfriendly to France, had to submit to the overrunning of his lands by French armies. The Palatinate was invaded and harried when its Elector refused to join France against Austria, and the French forces passed through it to operate on the Middle Rhine (1673–9). When the French were not strong enough to maintain themselves against the imperialists on the Rhine, they devastated the Palatinate as a measure of defence (1689). Moreover, Louis XIV was intent on claiming what he could of the Rhineland under form of law. His Chamber of Reunion at Metz decided that certain lands held by the Elector of Trier, the Duke of Zweibrücken, and others belonged of right to the Crown of France. In 1685, on the failure of male heirs in that branch of the Wittelsbachs which had held the Palatinate since 1559, Louis claimed a part of this principality in the name of his Wittelsbach sister-in-law, the Duchess of Orleans.

But at the Peace of Ryswick (1697) this claim had to be dropped, and at the end of Louis XIV's wars (1714) the gains of France towards the Middle Rhine amounted only to further progress in the absorption of Lorraine, an advance in the valley of the Moselle at the expense of Luxemburg, and the acquisition between Moselle and Rhine of a few patches of territory, the most important of which were those containing the fortresses of Saarlouis and Landau. But as the Empire was no stronger than before France still dominated the Rhineland. She was in a position to throw her troops into this country before Austria or any other Power could come to defend it. The princes here looked to France with a mixture of dread and hope, dread of invasion and hope of subsidies. Meanwhile the French had come to look on this imperial territory as their ‘ doormat ’, to use the metaphor which Catherine II of Russia applied in a somewhat analogous sense to Poland.

In the reign of Louis XV France was able to exploit the political condition of the Rhineland. Thus in the War of the Polish Succession the Electors of the Palatinate and Cologne stood out of the conflict, although the Imperial Diet had voted for joining Austria against France: the French were able to engage the enemy on the Middle Rhine. In the war of the Austrian Succession the Rhine Electors, acting under French instigation, partly bribed and partly intimidated, voted the Empire away from Austria to Bavaria. In the Seven Years' War they sided with France and Austria against Prussia. French armies were able to pass freely through the country on their way to the Rhine or Central Germany.

In the last years of the old régime the comparative security of France on her eastern frontier, and the obvious advantages which she derived from the *status quo* in the Rhineland, had suspended the traditional French forward policy on the side of the Empire. (The annexation of Lorraine in 1766 was merely the automatic result of the Treaty of Vienna of 1738, which again had only arranged for the winding up of an affair that the French Monarchy had long had in hand.) Rousseau might declare that the Rhine was the natural frontier of France: but Vergennes, the Foreign Minister of Louis XVI, disliked the idea of any further French advance northwards or eastwards. Such an advance would involve the upsetting of the *status quo* throughout Germany (for it would certainly be accompanied by compensatory annexations on the part of Austria and Prussia), and that in the end would not be to the interest of France. Yet it is noticeable that Vergennes admitted that if, unfortunately, France should be obliged to make annexations (if, that is, she should ever be forced to compensate herself for the aggrandizement of Austria), then the Middle Rhineland would be the country best for her to take. The forward policy was in suspense; but it would be revived if France should again believe herself to be menaced seriously from the direction of the Rhine.

2. THE FRENCH CONQUEST AND THE PRUSSIAN ANNEXATION (1789–1815)

a. The Rhinelanders of the Left Bank at the beginning of the French Revolution

When the French Revolution broke out the Rhinelanders were in a condition that made their absorption by revolutionary France quite possible—the rest of Europe being left out of account. The Rhinelanders were Germans, but of all the Germans they were the most West-European in their origins and in the development of their society and culture. Their German patriotic sentiment scarcely amounted to more than a sentimentality; the political condition of Germany kept it languid and ineffectual. On the other hand, the Rhineland had long been penetrated by French policy and French arms. In the service of the French State—and especially in the German regiments of the royal army—many Rhinelanders had found their careers. French thought and art and manners had spread among the upper classes. Indeed, for the past hundred years France had been exercising on the Rhinelanders that attractive force which a great nation, organized in a powerful State, and possessing a culture adapted to serve as a model and inspiration to other peoples, naturally exercises on neighbours who are politically weak and divided, and have the intelligence and the traditions needed in order to appreciate and assimilate the stronger civilization. At the same time, the Rhinelanders were suffering from the social and political conditions which—in a less acute form—provoked the Revolution in France. Their 'enlightened' classes criticized these conditions by the standard of cosmopolitan ideals and universal social and political principles which were the ideals and principles of the French enlightenment. The

Catholic religion was the only part of the old order that had strong roots in the loyalty of the masses. Thus the Rhinelanders were capable of appreciating the advantages of French rule if it swept away the old order but favoured Catholicism, and if it proved reasonable and beneficial where the old régime had been irrational and oppressive; on the other hand, they had at this time no intense national feeling which would be likely to make them profoundly and permanently resentful of such a rule in spite of its advantages; they were capable of learning to be French—on the middle Rhine perhaps more quickly than on the lower. Ultimately they were to acquire a strong German patriotism, because French rule was too short-lived to complete their conversion to the sentiment of French citizenship, and because when they returned to German rule they found themselves in a new Germany where their national self-consciousness was to be immensely stimulated. It is indeed possible that, even if France had been allowed to keep her Rhine frontier, the infection of the new Germany would have so spread among the Rhinelanders west of the river as to defeat the French attempt to assimilate them. Nevertheless, between 1789 and 1815, Germanism on the left bank of the Rhine was put in peril.

In 1789 Cleves, the neighbouring county of Mörs, and a part of Gelders were Prussian. But since Frederick II's day Prussia had showed herself little interested in these outlying territories, widely separated from the main body of the Hohenzollern dominions. As the event proved, she was not prepared to go to extremes to keep them, especially if she could hope to be compensated for their loss. Jülich, Berg, and the Palatinate were under the rule of Charles Theodore, a Wittelsbach; in 1777 he had become Elector of Bavaria on the failure of the old Bavarian

Wittelsbach line. A cadet branch of the Wittelsbachs held the Duchy of Zweibrücken. Of the ecclesiastical electorates, Cologne was ruled by an Austrian archduke, Trier by a Saxon prince who had been an officer in the Austrian service; but the House of Saxony had close relations with France, and it may be recalled in this connexion that France and Austria were at the time officially, though not cordially, allied. There were still a great number of smaller states and lordships, amounting to almost a hundred, in the area now occupied by the Prussian Rhine province.

In the ecclesiastical electorates the governments were on the whole well-meaning and mild; some of the secular administrations were reasonably conscientious, many indifferent, a few very oppressive. All the states and territories were more or less encumbered with time-honoured abuses, or with institutions that had long ceased to correspond to the real needs of the population. Attempts at reform were made by several 'enlightened' rulers (for instance, the Electors of Trier and Mainz), but these acts of benevolence, while encouraging a desire for change among the people, were quite inadequate to the situation. The old Estates, which retained their right of voting taxes, embodied a certain tradition of constitutionalism, but, representing privilege, they could not be the organs of serious reform.

The ties between the governments and their subjects were weak. The ecclesiastical princes lacked the advantage of local dynastic traditions (the quasi-dynastic position of the House of Bavaria in Cologne had come to an end in 1761); archbishops and abbots were merely officials with a life tenure, owing their rank generally to extraneous political or family influences. The secular territories were properties that not infrequently passed from one house to another, or from one branch of a family to its distant cousins, by transactions, or in accordance with rules of succession, which the inhabitants could not control. Very many of the secular lords of the land were absentees. In general, the established authorities were so petty and so little in touch with the people, that, while their existence fostered particularism and atrophied German national sentiment, it was impossible for them to attract any strong feeling of loyalty. Only the subjects of Prussia could take any pride in the power and achievements of the government to which they belonged. The people of Cleves fed their souls on admiration of Frederick the Great, but their goodwill received little encouragement.

The 'enlightenment' was to be found among the aristocracy, the *bourgeoisie*, and in an element of the clergy that was drawn from these two orders. It was made up of principles and sentimentalities which were quite irreconcilable with the existing order. It was the *bourgeois* revolutionary idealists who were most in earnest, but all who shared in the feeling that the political and social conditions of Germany were full of harmful irrationalities and unjust inequalities were helping to undermine those conditions. The unrest took strange forms, as in the secret societies of *illuminati* with their programme of universal liberty, equality, and fraternity.

The peasants generally held their land by servile tenures, but were almost everywhere personally free. They were more or less burdened with feudal dues and services, and generally also with an unfairly heavy share of taxation. On the whole the Rhenish aristocracy had not gained a firm hold on its peasantry by energetic and careful administration. The peasants were in a condition to accept with satisfaction a rule that enfranchised their land and destroyed privilege.

The great majority of Germans west of the Rhine were Catholics, and the enlightenment had not disturbed the mass of the people in their attachment to their religion, but there was less militant ardour in Rhenish Catholicism than in Belgian. Gallicanism had its counterpart ('Febronianism') among the Rhenish clergy. The Protestants were grouped mainly in Cleves, Mörs, the Palatinate, and in a few towns or districts elsewhere; their condition varied from State to State, but generally they were under disabilities of one kind or another. The Jews were cramped by various restrictions.

b. *The French Conquest and Annexation* (1792–1815)

War broke out between France and the Austro-Prussian coalition in 1792. A principal ground of dispute had been the French claim to apply the reforms of the Revolution to Alsatian lands held by German—chiefly Rhenish—princes, whose seignorial rights in Alsace were guaranteed by treaty. But the French had been impelled into war by their excited hopes and fears: the fear that the monarchies of Europe, and especially Austria, the hereditary enemy and hated ally, were plotting with each other, with the *émigrés* and with the enemies of the people in France to destroy the Revolution; the hope of propagating the Revolution and the glory of the new France in Europe; and, in the minds of Girondist politicians, the hope that war would establish the republic. At first there was no definite intention of annexing the Rhineland; it was indeed to be revolutionized, but the Assembly solemnly repudiated the idea of conquest.

In 1792 France was invaded by the Austrians and Prussians. The enemy was repulsed at Valmy, and retiring left the Upper Rhineland open to the French, who overran it. In 1793 the allies returned, and the French were driven out. This was the year of extreme peril for France; the main attack on her was from the Netherlands, but the menace came from all the country between the French frontier and the Rhine. In 1794 the French counter-offensive was victorious, and by the end of the year the French armies had occupied practically all the country west of the Rhine from Alsace to the North Sea. In the Rhineland the only footing that the Austrians retained was at Mainz. The French occupied the country till it was definitely ceded to them by the Emperor in the Treaty of Lunéville (1801).

The outbreak of the French Revolution had been welcomed enthusiastically by 'enlightened' Germans, and especially by the enlightened *bourgeoisie* in the towns of the Rhineland. But the welcome was given to the beginning of a new era for humanity. Only a very few Rhinelanders desired that their country should be annexed by France, and most of those who had acclaimed the first stages of the Revolution were in the end shocked by the fierce and extravagant violence of the French. In their first occupation of the Upper Rhineland during the winter of 1792–3 the French had tried to spread the revolutionary faith, but even in Mainz, where revolutionary and pro-French feeling was strongest, the organization of a republic was the work of a small group of enthusiasts, and was made possible only by the presence of the French army. The mass of the population remained inert, and the contributions levied by the invaders did not make the conversion of the people easier. At the beginning of 1793 the French, passing by easy stages from their renunciation of conquests to a very different policy, summoned a Rhenish convention which, elected by popular vote, should declare in favour of union with France. But the return of the Allies interrupted the French authorities and their partisans in the work of 'making' the elections. The majority of Rhinelanders were glad to see the French go; on the other hand the conduct of the Austrians and Prussians, when they reoccupied the country, made the French seem in retrospect not so bad after all.

With the conquest of the Rhineland by the French armies in 1794 there began a miserable time for the country, which suffered under the extortionate, corrupt, and fanatical tyranny of the French commissioners representing the Directory. For the three years during which this oppression was at its worst the Rhinelanders remained almost wholly passive. Here and there were displayed feeble signs of regret for the old governments under which life had been easier, but these demonstrations came chiefly from those who had profited, or had suffered least, by the old régime. A few individuals declaimed against French oppression of a German people. Much more general was a rather timid show of discontent with French anti-clericalism. On the whole, it seems that the mass of the population, though it may have wanted to be rid of the French, had no desire to return to the old régime, and disliked French rule because it was oppressive rather than because it was foreign. The Jews were the one considerable section of the community that were definitely in favour of French annexation. They had been emancipated by the invasion, and they were profiting financially by the presence of the French armies, the confiscations of property, and the general confusion of the times. They at least had no sort of prejudice against French rule, in which they saw the only security against a return of the old order.

During these years the fate of the Rhinelanders was in suspense. The perils through which France had passed in 1792 and 1793 had led French public opinion to demand the annexation of the Rhineland as a measure of self-defence. There was a widely held assumption that if France could establish herself on the line of the Rhine she would be safe. There was also the feeling, characteristic of the age, that the Rhine was the 'natural' frontier of France, and therefore a frontier which an enlightened France, organized in accordance with the principles of nature, ought to acquire, a frontier, moreover, which by its reasonableness would command the respect of Europe. Lastly, there was the argument that this gain of territory was only just compensation to France for the acquisitions which her continental enemies were making in Poland. On the other hand, there was a minority which for various reasons doubted the wisdom of claiming or taking the Rhineland. France needed peace; her enemies were powerful, and the consequences of prolonging the war by insisting on the Rhine frontier might be disastrous. There were financiers who had private reasons for wishing the war to end as soon as possible; there were moderates and royalists of various shades who looked forward to an early and not too successful peace as a condition of destroying the Directory; there were a few men like Carnot and Barthélemy who feared that a French conquest of the Rhineland would prove only the beginning of new and ruinous conflicts; and from the military point of view it was urged by some that France had better be content with the line of the Meuse and Luxemburg. At times when the war was not going well these doubts gathered strength, and temporarily affected the policy of the Government.

But although neither Prussia nor Austria wished to see France expand to the middle and lower Rhine, both these states were preoccupied with hopes of territorial gains elsewhere. Prussia, indeed, soon withdrew from the war against France in order to have her hands free for a partition of Poland. By the Treaty of Bâle (1795) she acquiesced in the French occupation of the country on the left bank of the Rhine until a general peace should be concluded between France and the whole Empire. It was also agreed, secretly, that if in this general peace the left bank of the Rhine should be ceded to France, Prussia should receive compensation for her Rhenish provinces elsewhere in Germany. It remained to bring Austria to terms, and in the end it was Bonaparte who, partly by his victories and partly by his diplomacy, won the Rhine frontier for France. His conquest of North Italy (1796–7) and the appearance of his army at Leoben, threatening Vienna, together with a change of rulers in Russia which deprived the Austrian Government of the hope of Russian support, forced the Emperor to negotiate. Bonaparte's policy was to buy the left bank of the Rhine at the price of allowing Austria to take Venetian territory in Italy and Dalmatia. By the published articles of the Treaty of Campo Formio (October 1797) the Emperor stipulated that a congress of imperial states should be summoned to negotiate the terms of a general peace in Germany on the basis of the integrity of the Empire, but by secret clauses Austria promised to use her influence at this congress to obtain for France the Rhine frontier, and also agreed to withdraw her troops from Mainz. The congress met at Rastadt. A deputation of ten imperial states—not including either Austria or Prussia—had been appointed to negotiate peace in the name of the Empire. To this deputation the representatives of France presented a demand for the cession to the Republic of all imperial territory on the left bank of the Rhine. The deputation at first resisted, secretly encouraged by Austria and Prussia, but the French stood to their terms; the deputation soon found that it could not rely on support from the two great German powers, and finally it agreed to the French demand (March 1798), and there began a general scramble among the Germans for compensations. These were found in the ecclesiastical territories and free cities east of the Rhine, which, secularized and mediatized, were to be portioned out among the lay princes dispossessed by France. The Congress of Rastadt, however, did not bring its work to a conclusion. The Russian Government changed its policy, and Russia and Great Britain pressed Austria to renew the war. Austria, assured of Russian support, encouraged by Bonaparte's absence in Egypt, and hoping to get a better peace than at Campo Formio, again took up arms. The Allies talked of pushing France back from the Rhine. The Russians and Austrians were victorious in 1799, till in the autumn they were checked in Switzerland. Bonaparte returned from Egypt, overthrew the Directory, and beat the Austrians at Marengo (1800). Austria sued for peace. In the Treaty of Lunéville (1801) the Emperor in his own name and in the name of the Empire (the consent of which was taken as having been already given at Rastadt) ceded to France all imperial territory west of the Rhine. In 1802–3 the compensatory secularizations were carried out under French auspices. Prussia and Bavaria, as well as Würtemberg, Baden, and Hesse in their degree, profited greatly by this transaction. By receiving the episcopal territories of Munster, Paderborn, and Hildesheim, and the abbatial lands of Elten, Essen, and Verden, Prussia acquired in Westphalia much more than she had lost on the left bank of the Rhine. In this way France was trying to make herself the head of a grateful German clientèle which should entertain lively expectations of favours to come, and should be a counterpoise under French control to Austria.

The Rhineland meanwhile had been organized as a part of the French State. Before the Peace of Campo Formio had been concluded, Hoche, who had been placed in command of the French army on the lower Rhine, had done his best to improve the administration of the occupied country. At the same time the example of the republics which Bonaparte had recently created in Italy had encouraged a movement among the Liberals of the Rhenish towns in favour of a Cisrhenane Republic, autonomous, but allied with and protected by France. This suggestion probably expressed a very general feeling among the Rhinelanders, a desire to be left to themselves to enjoy in independence the advantages which could be derived from the principles of the Revolution. But the proposal was, in the circumstances, impracticable; the movement was quashed by the French Government.

After the Treaty of Campo Formio the country was divided into four departments: the Department of Roer, capital Aachen; the Department of Rhine and Moselle, capital Coblenz; the Department of Sarre, capital Trier; the Department of Mont-Tonnerre (Donnersberg), capital Mainz. The Rhinelanders hoped that now that they were finally recognized as citizens of the French Republic there would be an end to the oppression which they had suffered since the conquest. But so long as the Directory lasted oppression continued, and for a time the disappointment of the people only increased their discontent.

Nevertheless the Republic had enfranchised the land of feudal dues and services, had freed industry by the dissolution of the old guilds, had unified the country by the abolition of the old political structures, and had shaken the mass of the inhabitants out of the stagnation of their *Kleinstaaterei.* The secularizing of the enormous states of the Church had enriched the laity; the dissolution of religious corporations and the persecution of the priesthood in the end, perhaps, put new life into the Catholicism of the Rhineland.

The ground had been cleared, and the positive work of building up the new order was vigorously taken in hand under the Consulate and the Empire. The country was no longer harassed by its rulers. As the result of the concordat between the French Government and the Papacy the mass of the population recovered its religious freedom. The new French Codes introduced a system of law based on civil equality and incomparably better than the old legal institutions. The Napoleonic administrative machine contrasted extraordinarily in its simplicity, uniformity, and efficiency, with the diverse administrations of the past. It was, moreover, well worked by able and conscientious prefects. The material prosperity of the country was fostered. Industry was encouraged by protective tariffs, by a reasonable code of commercial law, by the improvement of communications, by the organization of chambers of commerce, and other measures. Napoleon's wars meant heavy conscription, but it had always been easy to put Germans under arms to fight in quarrels not their own, and the Rhineland conscripts of the Napoleonic period seem to have been good material. Meanwhile the Rhineland itself was protected from war, and its industry and agriculture profited by the supply of the armies.

The Rhinelanders were encouraged by the Government to consider themselves French; they were Franks of Austrasia; their country had been the centre of Charlemagne's empire; that empire was Frankish, therefore French, and it had now been revived by Napoleon. Such appeals to history or legend do not seem to have aroused much response. The people had not ceased to feel themselves Germans, but they were Germans who were now finding in French rule little to irritate them and much to admire and be thankful for. Yet since they had not had time to learn to be French, the general outburst of German national feeling in 1813 had its effect on the Rhinelanders, especially as German patriotism and liberalism were at the time united; and in the end the greater part of the *bourgeoisie*, at least, was ready enough to return to a Germany which it hoped to find liberal and progressive.

c. The Settlement of 1815

None of the great European Powers was content to see France on the middle and lower Rhine, and the aggressions of Napoleon did not allow Europe to become reconciled to this extension of French territory. When the Napoleonic Empire fell the Allies were agreed on the principle of reducing France practically to her *ante bellum* limits. In 1814, by the First Treaty of Paris, the French frontier was pushed back from the middle and lower Rhine to the Saar country. The new frontier was to be slightly different from that of 1792. France was allowed to keep Saarbrücken and Arneval; the fortress of Landau, which remained French, was not, as in the eighteenth century, to be an isolated enclave, the frontier-line being now drawn from south of Obersteinbach to Landau, and thence along the Queich to the Rhine. After Waterloo, the Germans were inclined to demand Lorraine and Alsace, but owing to the opposition of Great Britain and Russia to this policy (see p. 174) the losses of France between Moselle and Rhine by the Second Treaty of Paris (1815) comprised only Saarlouis, the Saarbrücken-Arneval district (so that France lost all hold on the line of the Saar), and Landau, with the country between the Queich and the Lauter. It was at the mouth of the Lauter the French frontier now met the Rhine.

Meanwhile the fate of the Rhineland had been settled. Prussia was to take the greater part of the German territory west of the Rhine, and, posted here, was to contain the ambitions of France. The Prussians, though they were willing to keep certain strategic points in this region (for example, Mainz and Luxemburg), were not particularly anxious to find their main share of the spoils on the Rhine, where their territory, exposed to French attack, would be separated by Hanover from the main body of the kingdom; where, too, the inhabitants were far from sympathetic with the Prussian spirit. It was Saxony that Prussia coveted; the possession of Saxony would give Prussia a solid block of territory in North Central Germany which would immensely strengthen her position as a German power. But though the Tsar, in his anxiety to obtain Posen for a reconstituted Polish kingdom of which he was to be the sovereign, was willing to fall in with Prussian views, Austria and Great Britain opposed the Russo-Prussian scheme, Austria mainly because she feared the aggrandizement of Prussia in Germany, Great Britain mainly because she feared the aggrandizement of Russia. Talleyrand supported the Austro-British combination, and Prussia was forced to accept her lot in the Rhineland Westphalia. By the Final Act of the Congress of Vienna (June 9, 1815) Prussia received her ‘ Grand Duchy of the Lower Rhine ’. On the left bank this included the territory between the Rhine on the east from the Dutch frontier up to Bingen, and on the west the frontiers of the Netherlands, Luxemburg, and France. In 1822 this area, together with the former Duchy of Berg and some smaller districts on the right bank, became the ‘Rhine Province’.

For history of the frontier between the Rhine Province and Belgium see pp. 178–80: for the frontier between the Province and Luxemburg see p. 200: for the boundary between the Province and Lorraine see the *Manual of Alsace-Lorraine.*

The southern end of the modern Rhine Province has undergone various territorial changes since the Congress of Vienna. By the Final Act of the Congress the southern boundary of Prussian territory left the Glan below Lauterecken and passed westwards to the Saar between Saarburg and Conz, crossing the present Oldenburg Principality of Birkenfeld. The part of the present Rhine Province that lies south of this line was at first partly French (in accordance with the First Treaty of Paris of 1814) and partly Austrian (for though Austria had no intention of remaining here, the territory west of the Rhine that had been taken from France and not assigned to Prussia had been handed over to her keeping, while the rearrangement of Southern Germany, a thorny business in which she was specially interested, was being carried out). After Waterloo it was agreed by the Protocol of Nov. 3, 1815, that Prussia should obtain the territory in the Saar country which was to be detached from France in the Second Treaty of Paris (the Saarlouis and Saarbrücken districts): and by the same Protocol and by the Treaty of July 1, 1816, Prussia received from Austria the land between the Lauterecken–Conz line and the present border of the Province towards the Bavarian Palatinate and Lorraine. She did not, however, retain all the territory so acquired in her own hands, for by the Final Act of Vienna it had been agreed that in the former French Department of Sarre there should be reserved a district in which the Duke of Saxe-Coburg and the Duke of Oldenburg should receive territories comprising 20,000 inhabitants each, and the Duke of

Mecklenburg-Strelitz and the Landgrave of Hesse-Homburg should each acquire a territory with 10,000 inhabitants. Of these princes the Duke of Mecklenburg-Strelitz was assigned by a Treaty of Sept. 18, 1816, a territory, not in the Saar country, but near the border of the Netherlands in the districts of Reiffenscheid, Cronenburg, and Schleiden: this, however, was surrendered again to Prussia by Mecklenburg-Strelitz in a Treaty of May 21, 1819. To the Landgrave of Hesse-Homburg was given Meisenheim on the Glan; on the extinction of the male line of Hesse-Homburg this small territory passed with the Hesse-Homburg Landgraviate to Hesse-Darmstadt (March 1866), but almost immediately afterwards, as a result of the Austro-Prussian War, it was ceded by Hesse-Darmstadt to Prussia (Treaty of Sept. 3, 1866). To Saxe-Coburg went the Principality of Lichtenberg lying between the Oldenburg territory of Birkenfeld and the Bavarian Palatinate: it was sold by Saxe-Coburg to Prussia by an agreement of May 31, 1834. Finally, Oldenburg received the Principality of Birkenfeld, which it still holds.

The present Bavarian Palatinate had been handed over to Austria in 1815, and was then ceded by Austria to Bavaria (Treaty of Frankfort, July 20, 1819) in return for the retrocession by Bavaria to Austria of Salzburg and other formerly Austrian territories which had been transferred to Bavaria by Napoleon. Hesse-Darmstadt obtained its lands west of the Rhine (including Mainz) by a Treaty with Austria and Prussia of June 30, 1816. The limits of these various territories were settled in the Treaty of Frankfort (1819).

3. THE RHINELAND SINCE 1815

a. Boundaries

Little change has taken place in the boundaries of the Rhineland since 1815. The two areas in which the country was at first administered, viz. the provinces of Jülich–Cleves–Berg and that of the Lower Rhine, were amalgamated in 1822. The Principality of Lichtenberg, which was bought from Saxe-Coburg in 1834, is now the *Kreis* St. Wendel. The territory acquired from Hesse-Darmstadt in 1866 is now the *Kreis* Meisenheim. The Birkenfeld territory belonging to Oldenburg has become an *enclave* in the province. By the incorporation of Nassau in Prussia in 1866 the territory by which the outlying *Kreis* Wetzlar was separated from the province ceased to be in the hands of another State.

The boundary of the province is nowhere a rigidly defined physical frontier, except where it follows rivers or streams, as from Bingen to the mouth of the Lahn and for the greater part of the Luxemburg border. It is, however, rather more definite on the west, where it coincides with the frontier of the German Empire, than on the east, where it is only an accidental line of division between provinces or states.

On the west it starts in the north by running across the plain parallel to and about five miles away from the Meuse, to Roermond; then, irregularly, past neutral Moresnet (where the Belgian frontier begins) to the Luxemburg border. The Belgian frontier gives to Prussia the Walloon-speaking *communes* round Malmédy (see under ‘Distribution of Languages’, p. 103); it runs alternately along streams or watersheds, or diagonally across them; but the country is barren and sparsely inhabited; and the line in part corresponds to the Teutonic–Romance linguistic boundary. For its exact relation to this boundary see pp. 80, 85–8, 103–4, and Atlas, Map 4.

This and the Dutch frontier form the only section in which the boundary coincides with a linguistic frontier, as the German dialects run, like the mountain ridges, north-east and south-west, and cut across the boundaries of States.

b. *Political History to 1850*

The history of the Rhineland from 1815 to 1871 is not one of territorial change. It is rather the story of the process by which Prussia evolved into a national German State; a process as yet incomplete. To the Rhinelanders it was a case of putting up with, while gradually educating, their masters; to the Prussian the most important task seemed that of maintaining the strength of Prussia even at the cost of postponing the union of Germany.

The first years after 1815 were a period of increasing reaction, and brought bitter disappointment to those who had hoped for a free and united nation. The Rhineland had been spared the disasters which the rest of Germany had suffered under Napoleonic rule, and had shared in its benefits. Now it found that the burdens of heavy taxation and conscription remained, and that it had exchanged the rule of the French for that of a state that was less enlightened and even more foreign in its views. Prussian officials were everywhere installed; the promised constitution was indefinitely postponed; and a vigorous censorship of university teaching and the press checked all expression of the national aspirations. To King Frederick William, as to his mentor Metternich, the desire for national unity and the desire for constitutional liberty seemed alike indistinguishable from anarchy and atheism; and the national aspirations of the Rhinelanders were actually branded as *Franzosenfreundlichkeit.* The climax was the suppression in 1816 of Görres' *Rheinische Merkur*, which had done more than any other journal to rouse the national feeling in the years 1813–15. Its offence had been that it demanded a German policy from Prussia.

Gradually, however, the tenacity of the Rhinelanders asserted itself, and they came to take the lead in the nineteenth century in the spheres of constitutional progress, industry, and religion.

The first Rhenish Diet was held in 1826. It had been postponed for eleven years; it was elected almost entirely on the basis of ownership of land; and the privileges conferred upon it amounted in sum to considerably less than any of the local Estates in this part of Germany had enjoyed before 1790. Yet it none the less expressed the national feeling of the province, and the experience gained by its members in days of greater liberty gave it a statesmanlike tone which placed it in front of all other provincial Diets.

It was principally occupied, during its first seven sessions, with Government proposals for alterations in local administration, which it politely but persistently rejected. In the meantime it developed a definite constitutional programme, which was to have a deciding influence at the first joint meeting of the Prussian Diets in 1847. The Liberal ministry of 1848 had two Rhinelanders—Camphausen and Hansemann—at its head; and the Prussian constitution of 1850 was mainly based on the Rhenish proposals as redrafted by another Rhinelander, Peter Reichensperger. The Rhenish constitutionalists thus assisted the Prussian Government to save itself from the consequences of the summoning of a constituent assembly which, like others of its kind, spent many weeks in discussing single articles without arriving at any satisfactory result. Its formula, as expressed in the Rhenish Diet, was the gradual evolution of a constitution as in Great Britain from the existing institutions of the State.

In local government the persistent exertions of the Rhenish Diet secured the retention of some special features inherited from French rule. The Rhineland shares with the other main districts west of the Rhine (viz. Alsace-Lorraine and the Palatinate) the ‘ mayoral ’ urban constitution as opposed to the ‘ magisterial ’. The municipal government consists of the mayor and his subordinates on the one hand, and the town council on the other. This was a privilege which the Diet fought for until it was conceded in the Local Government Act of 1846, and subsequent modifications have not removed it. It has two great advantages over the Prussian ‘ magisterial ’ system, where there is an intermediate body, the ‘ Magistrat ’, between the mayor and the council ; it leads to greater expedition ; and it avoids the jealousy that appears to be universal between the ‘ Magistrat ’ (where it exists) and the council. The Rhineland also enjoyed the advantage of the Napoleonic *code civil* until the general codification of the law after the formation of the Empire.

c. Political History since 1850

On the adoption of the constitution in 1850 the provinces as such ceased to be concerned with other than local interests. National parties took the place of provincial ; and in this connexion the question of Church and State became a decisive factor.

The Rhineland had been in the hands of Catholic princes, lay and ecclesiastical, at the time of the Reformation, and had remained Catholic. Sixty-nine per cent. of the population were Catholic in 1910. This was one of the reasons which made Prussia reluctant to take the province in 1815; and it proved a source of constant friction in the nineteenth century. In 1815 the State found the Church weak; until 1824 the sees of Cologne and Trier were vacant; and the Government was then able to impose terms on the bishops. But in 1835 the new Archbishop of Cologne refused to abide by the agreement, according to which mixed marriages were to be unconditionally recognized. The ensuing conflict was not only ended by the grant of full liberty to the Churches in the constitution of 1850, but the years of struggle had brought a great access of vigour and power to the Catholics; schools had been founded; monasteries and convents had spread; new orders had been founded; and a number of laymen's societies had been formed, especially in the years 1840–50. The first meeting of German Catholic bishops had taken place in 1848; and the Church had learnt the advantage of national combination. The Pope significantly conferred the dignity of Cardinal on the Archbishop of Cologne in 1850. Both Churches had been since 1815 dependent on State subventions; but the Catholics were now in a far stronger position than the Protestant Church, whose supreme overlord was the king. Accordingly when, after 1871, Bismarck felt himself in a strong position, thanks to the incorporation of the Protestant Hanover and Hesse-Cassel, and the wresting of the leadership from Catholic Austria, he proceeded to take measures to reduce the Catholic power within constitutional limits. The 'May Laws' of 1874 were issued, providing for State approval of the appointments of clergy, and State-prescribed limits to ecclesiastical discipline. The consequence was, however, an enormous growth of the Catholic party, or 'Centrum'. Bismarck fought it for a few years, but without success; and in the meantime he wished to throw over the National Liberals. Accordingly he was forced to obtain the support of the Centrum for his programme, and conceded virtually all the ecclesiastical privileges that the 'May Laws' had withdrawn. His concessions have since been extended.

In the past thirty years there has been no acute conflict between Church and State in the Rhineland. But the Centre Party is still dominant there. Apart from the fact that it has behind it the support of the Catholic clergy and societies, it well represents middle class views by its restricted political liberalism, its fundamental respect for law, order, and property, and its expansive patriotism. On the other hand, it has patronized social reform and Catholic trade unionism with such success as to delay the spread of Socialism among the working classes of the Rhineland. While it is still more or less opposed to the Prussian theory of the State and to the dominance of Junkerdom, it cannot be regarded as a separatist force, or in any serious sense *Reichsfeindlich.*

The Centre now includes 46 out of the 63 Rhenish members of the Prussian Abgeordnetenhaus, and 27 out of the 36 Rhenish members of the Imperial Reichstag. Forty-nine per cent. of the votes polled in the province at the Reichstag elections of 1912 (664,000 votes) were given to the Centre Party. The other members elected were:

Social Democrats . . .	5	(323,000 votes)
National Liberals . . .	4	(216,200)
Wirtschaftliche Vereinigung, &c.	1	(35,900)
Freisinnige Volkspartei . .	0	(49,200)
Conservatives	0	(38,000)

27 out of the 91 members of the Centre Party were elected in the Rhineland.

d. Economic History

The constitutional and religious differences were aggravated in the first few decades after 1815 by the

Government's failure to understand the economic needs of the province. At that time there were no canals in the province, and traffic on the Rhine was still subject to dues, including a levy on all goods passing Cologne or Mainz. It is true that Prussia extended the system of macadamized roads begun by Napoleon; but until 1830 the increase was at a slower rate than under French rule; while at best the cost of road-borne traffic was very high. Coal transport cost 8*d.* per ton per mile, as against less than ½*d.* to-day by rail, and less than ⅕*d.* to-day by water. The competition of France and Holland, and especially of Great Britain, was severe, and actually ruined some industries that had grown up under Napoleon's continental blockade. But the great need was for capital. The law restricted the formation of limited companies. These could not be formed except by special sanction, which was rarely granted, and only on special terms. Industry had to rely on private capital, assisted by foreign borrowings; and the early history of the firms of Krupp, Haniel, Stinnes, and others is one of continual struggles to keep clear of bankruptcy. The rapidity of Prussia's recent economic expansion may be said to be due to its having been held up by State restrictions during the half-century after 1815.

The following are the chief steps in the economic development of the Rhineland:

The formation of chambers of commerce and building of roads under Napoleon.

The *Rheinschiffahrtsakte* of 1831, by which traffic on the river was freed from dues.

The Zollverein (Customs Union) which was built up among the German states between 1828 and 1854.

The law of 1843 permitting the formation of a certain type of limited liability companies (Aktiengesellschaften).

The sanctioning of the first joint stock bank (at Cologne) in 1850.

The commercial code of 1861, extending the uses of limited liability.

The commercial law of 1870 by which limited companies were finally absolved from the necessity of State approval. (There were then 235 in existence; in the years 1870–3 843 new ones were formed.)

Since 1871 the Government has pursued a vigorous policy (initiated by Bismarck) of encouraging economic development. In 1879 Bismarck introduced protective tariffs. The nationalization of railways (1880–6) was used to reduce freights, especially in assistance of export trade. The building of canals (the Dortmund-Ems canal, 1892–9, and its extension to the Rhine in 1914) and improvement of the Rhine (especially 1880–91) have also cheapened transport. A land credit bank was formed in 1888, since when capital has been increasingly used in agriculture, and the crop grown per acre has steadily increased.

e. National Sentiment in the Rhineland

National feeling in the Rhineland dates from 1813. There had been nothing to give rise to it before 1790, as the only national institution, the Empire, had become a symbol of all that was obsolete and effete. Under Napoleon the benefits of unity, liberty, and an administrative efficiency that had previously been undreamt of, found universal recognition; and even the idealists, though they withdrew from politics, submitted to Napoleon's enlightened despotism with a good grace.

Yet however great their pleasure at the enlightened government and its advantages, there was now one thing lacking—the national union with Germany. National feeling was called into existence here, as in the rest of Germany and in Italy, by foreign domination. The reunion with Germany in 1815 was welcomed, at least by some sections of the population, with the same enthusiasm as the passing of the Kleinstaaterei had been in 1793.

The awakening to the stern facts of Prussian rule in 1815 was perhaps even ruder than the disappointment of the idealists had been with the realities of the republic. It was also longer-lived, and for a generation or more the dominant attitude was one of resentment towards the cold northern military State which had broken its constitutional promises and obstinately refused to take the lead in uniting Germany. The liberties of the press and university were swept aside, and the views of the population less consulted than at any period in the two preceding centuries. Finally, the desires for constitutional and national unity were treated as Jacobinism.

The striking feature of the consequent anti-Prussian feeling is that it appears in no case to have been anti-German; it was the Prussian who was un-German; and both the constitutional question (notably at the Frankfort Parliament of 1848) and the Catholic question largely helped the growth of a solidarity between the Rhineland and the South German States which is expressed in modern times in the fact that the Catholic and National Liberal parties have their main strength in these areas.

It is noteworthy that there appears to have been no bitterness against France in the Rhineland: the earlier excesses had been obliterated by the blessings of the Napoleonic Empire. On the other hand there has never been any doubt that, great as those blessings were, the Rhinelanders would have preferred to enjoy them even then as members of a German State, and since 1815 they have unquestionably placed German unity before even the question of constitutional liberties. Only this fact explains the considerable popularity locally enjoyed even by Frederick William IV and William I in the province. It is true that the present Emperor has been decidedly unpopular there, but this is not a peculiarity of the Rhineland, and is in its case partly the result of his irresponsible utterances and misguided interference in local matters (such as strikes and the coal syndicate), and partly owing to his treatment of Bismarck, who was immensely esteemed in the province. Indeed, it is the successful national policy of Bismarck which finally welded the province to Prussia, and, while not diminishing its constitutional aspirations, put an end to any desire there may have been for existence as a separate state within the empire. The education of their masters by the Rhineland began with Görres' summons to the State in 1816, in which he called upon it 'in all respects to make itself a German Power, and not drag Germany down to the level of a Prussian Power'. Bismarck in addressing a Conservative party meeting in his later years used almost identical words.

f. France and the Rhineland since 1815

The Treaties of 1815 were odious to the French, and as their country recovered its strength they desired more and more to regain their former supremacy in Europe, and of this national aspiration the Rhine was the symbol. Moreover, the hatred of Prussia which undoubtedly existed among the Rhinelanders encouraged in France a widespread belief that these Germans wished to return to their French citizenship. The difficulty—for French Governments—was to find a favourable opportunity for recovering the lost territory. In 1829 Polignac was inclined to direct the

French effort towards Belgium, on the ground that an attempt on the Rhineland would provoke the implacable hostility of the German Powers. But French public opinion continued to cherish the hope of regaining the natural limits, and in 1840 an acute European crisis, which had its origin in the Near East, provoked among the French a strong popular demand for a war that should restore to France something at least of what she had surrendered in 1815. The agitation in France was answered by a furious outburst of German patriotism, of which the most memorable expression was the famous *Rheinlied* of Becker—'They shall not have it, the free German Rhine.' War was averted, but the termination of the crisis seemed to the French public inglorious for France, and thereby the Orleanist Monarchy received a jar which permanently weakened it.

In the earlier part of the reign of Napoleon III France gained a position in Europe that satisfied the national sentiment, and the Rhine ceased to be the great symbol of national regrets and hopes. But it was not forgotten, and when Bismarck set to work to make Prussia dominant in Germany the French Government conceived the idea that it might take advantage of the impending Austro-Prussian conflict in order to gain territory on the Middle Rhine. Bismarck was careful not to undeceive Napoleon on this point, until after Sadowa a definite French demand for Mainz was put to him. Then he succeeded in diverting French hopes to Luxemburg, with the consequences related above (pp. 191–2).

After 1871 French aspirations were directed towards the recovery of Alsace and Lorraine; and meanwhile the lands on the Middle and Lower Rhine were being welded more and more closely to Germany by their economic development as well as by the intensification of German national sentiment and ambitions. But, whatever the right or the expediency of the matter may be, it is hardly surprising, in the light of French history and tradition, that in the last three years, since France has again been put in mortal peril by an attack from the East and North, there should have been a revival, in some sections of French opinion, of the ancient dogma that France ought to possess or control all the German lands on this side of the Rhine.

NOTE TO CHAPTER IV

THE NEUTRAL TERRITORY OF MORESNET

The neutral territory of Moresnet (or, as it is known in Germany, the neutral territory of Altenberg) lies immediately south of the point at which Belgium, Holland, and Germany meet, and north of the Liége-Aachen main road. 'It does not form a State; and although placed under the joint administration of Prussia and Belgium, it is not subject to a simple *condominium.* It falls into no category recognized in the history of neutralities; its neutrality is neither a general not a partial neutrality. If we may offer a definition, it might be called a provisional and accidental neutrality. The territory of Moresnet owes its origin at once to the obscurity of a diplomatic document and to the inaccuracy of a map, and its existence appeared to be ephemeral, yet it dates from 1815, and each attempt to suppress it has but left it more firmly established' (M. René Dollot, in *Ann. des Sciences politiques*, 1901, p. 620).

Article 25 of the Treaty of Vienna (June 19, 1815) assigns to Prussia the five cantons of St. Vith, Malmédy, Cronenburg, Schleiden, and Eupen, and also the projecting corner of the canton of Aubel, included in the former *département* of the Ourthe, the frontier following the boundaries of these cantons, so that a line drawn from south to north should cut the corner of Aubel canton and continue to the meeting-point of the three former *départements* of Ourthe, Meuse-inférieure, and Roer. The phrasing of this article contradicted that of Article 66, and both were obscure, but Holland insisted upon the literal interpretation of Article 25. The result was a dispute concerning the disposal of a triangle of territory,[1] containing in its single village of Kalmis (now also known as Neutral Moresnet) 250 inhabitants. It was a district of no military value, but contained valuable calamine (zinc-ore) workings belonging to the Compagnie de la Vieille Montagne. The importance of these mines was doubtless a primary cause of the original dispute, and has been the chief obstacle to any later settlement.

At the convention of Aachen (June 26, 1816) it was resolved that the zone should be administered in common by Holland and Prussia, but should not be liable to military occupation by the forces of either State. Two commissioners were appointed, one by each party, to govern the neutral territory, but this was found an impossible method, and in 1841 it was decided to transfer the executive power to local authorities. The 'Union communale de Moresnet' was accordingly formed, comprising the three villages of Belgian, Neutral, and Prussian Moresnet (with the Revolution of 1830 and the rise of an independent Belgium that State acquired the Dutch rights over the neutral territory). This second arrangement, however, was little better, and decayed by degrees from 1856 onwards to its abolition in 1890.

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[1] The curiously divergent estimates of the area of the territory may be partly accounted for by the 'Union communale de Moresnet' in 1841 and its abolition in 1890. Thus Hoch gives 1,360 acres, the *Encyclopaedia Britannica* (1911, quoting Hoch), 1,400; a careful measurement of the area, as given in several large-scale maps, gives the writer 880 acres. An estimate (*Bull. Soc. Géogr. Rochefort*, 1901) of 395 acres is clearly an error. Lersch gives 6,425; this would about fit the three *communes* of Belgian, Neutral, and Prussian Moresnet.

Since 1890 Moresnet has been administered by a burgomaster, two deputies, and a municipal council of ten members. The burgomaster is nominated by Belgium and Prussia alternately; of the two deputies, one is the director of the mines and holds the position of deputy *ex officio*, the other is elected. The communal funds are supplied by taxes (income-tax, tax on Catholics for the upkeep of school and priest, inn-licence, and licence for draught-dogs), supplemented by a subsidy from the Vieille Montagne Company. All other taxes are collected by Prussian collectors, and shared equally by Prussia and Belgium. Customs are shared in the same way; they are only levied on imports re-exported into a State other than that from which they came. It is said that Prussia has been in the habit of securing the larger share of these revenues.

The administration of justice also is shared between Prussia and Belgium. All cases are tried in the first instance before the magistrate at Aachen, in the second by the Court of Appeal at Liége. Moresnet has conserved the Code Napoléon, which causes complications when e. g. a German thief tried at Aachen gets, according to the law of his own country, a few months, while the Code Napoléon specifies five years.

The inhabitants have no nationality. They are neither Prussians nor Belgians, and as Moresnet is not a State they are reckoned as having no State at all. They are thus exempt from military service, and for this reason a large immigration at one time set in. This was checked by an agreement as between Germany, Belgium, and Holland that only inhabitants of the district at the time of its neutralization, together with their descendants, should be regarded as natives and have no nationality; all subsequent immigrants, with their descendants, preserve their former nationality and its obligations. At present the population is 3,038; 1,380 are Prussians, 918 Belgians, 308 Dutch, and 432 are natives with no nationality. They speak a Teutonic dialect related to Dutch, and containing words from all the surrounding languages; but both French and German are generally understood.

It appears to be certain that Neutral Moresnet has gradually inclined more and more towards Germany, and that the Belgian connexion has weakened. The largest element in the population is the Prussian; it is said that Germany has for long had more than her share of the taxes and customs duties, and there is evidence that during the war the Vieille Montagne, though a Belgian company, has shown itself more favourable to Germany than other Belgian mining and metallurgical concerns. It seems indeed to have acted almost as a German agent for the purchase of zinc-ores and zinc in Belgium. The evidence, coming as it does from other Belgian firms which bitterly resent this action, must be accepted with caution; but it seems highly probable that the Vieille Montagne has passed actually, if not nominally, into German hands, and that accordingly the neutral territory of Moresnet—which is practically owned by the Vieille Montagne—has become predominantly German.

CHAPTER V

SOCIAL CONDITIONS IN BELGIUM

Introduction

The purpose of this chapter is to state as briefly as possible the chief facts concerning the life of the Belgian working-class.

The main heads of these facts may be summarized as follows. The population is very dense, but is, compared to that of England, France, or Germany, much spread out over country or suburban districts and comparatively little crowded into great towns. The land is much subdivided, and one in ten of the population owns some land; the practice of agriculture on a small scale is the rule rather than the exception among all the poorer classes. The agricultural labourer thus hardly exists. The system of farming results in an exceedingly high yield per acre, and the price and rent of land is very high. House rents are, on the contrary, low, and the standard of housing is good. Education and poor-relief are both in a most unsatisfactory condition; 20 per cent. of the adult population are illiterate, and relief is almost completely lacking in organization. Practically any one may sell alcohol, and a great number do so; drunkenness is very prevalent, one-sixth of the income of the working-class being spent in drink. The effects of this are especially bad, as beer, the old national drink of Belgium, is gradually being ousted by gin.

The scale of wages is very low; hours of work in factories are long, and the tendency is for the quality of work to fall below that attained in other countries.

There is a large amount of home industries which, while not by any means always sweated, form an unsatisfactory element in the industrial life of the country.

We shall now describe in outline the condition of the agricultural population, the industrial population, housing, education, and poor-relief.

THE AGRICULTURAL POPULATION[1]

It is difficult to get exact information as to the number of Belgians habitually employed in agriculture. The figure 1,200,000 (agricultural census of 1895) includes large numbers of industrial workmen and their wives, who cultivate small plots of ground and can hardly be described as anything more than allotment-holders. But the figure 697,000 (general census of 1900) is too low, since it omits many of the women who help their husbands with the work of the farm. In a country of small holdings, where the agricultural labourer is almost unknown, the work of these women is an important element in the agricultural life of the people. As, however, no more exact figures are available, the estimate of the 1900 census is accepted for the purposes of this chapter.

The agricultural population, so estimated, represents 23·1 per cent. of the occupied persons of the country, and an agricultural population of 95 per square mile of cultivated land. The proportion of this population to the industrial has been decreasing considerably during the last fifty years, but its absolute numbers have been increasing all the time.[2]

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[1] See further, Chap. VII on *Agriculture*.

[2] A French author (Charriaut, *La Belgique moderne*, p. 300) makes the serious mistake of inferring, from the *proportional* decrease of the agricultural population, an *absolute* decrease, and of dilating in consequence on a totally imaginary rural exodus. A shortage of labour there is; but its causes lie elsewhere.

The type of work done by the women varies a good deal. It is universal for the farmer's wife to take a considerable share of the work, and an unmarried man can hardly run a farm at all; but it is only in the case of very well-to-do farmers that the wife restricts herself to the housework and the dairy. In general she also undertakes the poultry and the calves, and such field-work as thinning, weeding, hoeing, tying corn into sheaves, &c.; or, in the case of market-gardens, cleaning and tying up vegetables, taking them to market and selling them. Sometimes they do heavier work, such as spreading manure and lifting turnips; occasionally even ploughing. In Flanders and Hainaut, from which districts about 50,000 men leave every spring to work in the fields in France,[1] the women have to do practically all the work of the small farms. Women's field-work in Belgium is thus not an indication of poverty among the agricultural classes, but is an essential of the system of small holdings.

Only 35 per cent. of the agricultural workers are in the position of paid labourers. The remaining 65 per cent. are either owners or tenants, or members of their families. Moreover the status of agricultural labourer is not, as it is in England, a permanent one. The great majority of such men are already cultivating small plots on their own account, and on the way to become independent farmers. Thus the sons of small farmers often begin by working for wages, investing their savings in land, either bought or rented, and cultivating it in their off time, generally with implements lent by their employers. In time they gradually drop their connexion with the employer and support themselves entirely on their own land.

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[1] The local name for these men is *Francsmannen.* See further, p. 251.

Wages vary a good deal from one district to another. The average for the whole country is 1*s.* 7*d.* a day without food, or 1*s.* a day with food. For women these averages are 1*s.* and 7*d.* respectively. The lowest wages are in Limbourg province (1*s.* 2*d.* and 7*d.* for men), the highest in Namur (1*s.* 11*d.* and 1*s.* 3*d.*). These low wages are supplemented by such perquisites as the free use, or use at a very low rent, of a small allotment and the free loan of horses and implements for its cultivation. Piece-work during the summer often yields a better wage. In some parts harvesters are paid in kind, e.g. in a share, varying according to the district, from one-eleventh to one-nineteenth of the harvest. Labourers working for these wages would be unable to support a family but for their own plots of land, which yield potatoes, and the goats and fowls which these plots generally support. It is also usual for the farmer to help his labourers towards a state of independence by advancing money for the purchase of stock or land. Some labourers, especially horsemen and cowmen, live in; these receive wages varying from 16*s.* a month in the Campine to 48*s.* in the Ardennes.

The wages of labourers have risen somewhat in recent years. This is partly due to the increased facilities for people living in the country to go into the towns for daily or weekly work; a certain shortage of labourers has thus been produced. The institution of *Francsmannen*, mentioned above, increases this scarcity in the west. These men go to France in gangs of about a dozen or more, and work on piece-work of one kind or another, according to the season, all through the summer, often making on average 8*s.* a day each and bringing back £20 or £30 in the autumn.

The peasant-farmer or small-holder has in most cases developed out of a labourer. His standard of living is not high, but it is adequate; by hard work he can always make a decent living, and his position is distinctly better than that of the English labourer to whom he roughly corresponds. The Flemish small-holder works harder and saves more than the Walloon, whose enterprise and initiative go far to make up for his somewhat lower standard of diligence. The worst feature of the life of this class is the high figure of rents (for details see p. 312) which tend to increase with every improvement to the land, and as two-thirds of these small-holders are tenants the class, as a whole, suffers a good deal, and its general standard of life is cut down to the minimum by this fact.

The large farmers are a prosperous but diminishing class in life and character, very much like the large farmers of other countries. They are fairly intelligent and progressive in their methods, especially in the Walloon districts; in many parts they work along with their labourers, though in some districts this is not done. The reason for the diminution of the large farmers as a class seems to be that, as the demand for small holdings increases, large farms are from time to time cut up into small plots, whereas the reverse very rarely happens.

The number of the agricultural population relatively to the whole is three times in Belgium what it is in England, and the Belgian rate of decline in this proportion is only half the English. The main conditions on which this great comparative vitality of agricultural life seem to depend are, first, the system of land-tenure, and secondly, the development of cheap means of communication. Such things as agricultural co-operation, education, &c., must be regarded as secondary to these two chief factors.

The Industrial Population[1]

Of the total occupied population of Belgium 39 per cent., or 1,130,000, are engaged on industrial work. The condition of this industrial class has improved considerably since Karl Marx described Belgium as ‘ the capitalist’s heaven and the working-man’s hell ’ ; but the Belgian factory hand is still on average the hardest worked and the worst paid in Europe.

The questions which we shall here briefly treat are the distribution of this industrial population, its wages, the length of the working day, and the general efficiency of labour.

The majority (about three-fifths) of the industrial class live in the Walloon districts, especially along and near the coalfield which runs from Liége to Mons and the frontier. The main agglomerations are round Liége, the Charleroi–Centre district from Auvelais on the Sambre to La Louvière, and the Couchant de Mons district. Here population-figures of over 1,000 per square kilometre are almost continuous, and are made up entirely of industrial workers. In the Flemish districts the industrial population is mainly concentrated in and round Antwerp, Brussels, and Ghent. But great numbers of Flemish towns have a certain number of industrial inhabitants.

The Flemish worker is on the whole inclined to be a town-dweller. He lives near his work, and very often—especially if he is a home-worker—in a slum. The Walloon districts, on the other hand, are remarkably devoid of large towns. Charleroi and Mons are not at all large ; no Walloon town but Liége (164,000) has a population of over 50,000, and only four others rise above 30,000. The Walloon factory-hand lives in semi-urban districts of vast extent, mostly in isolated houses, each having its plot of land, diligently cultivated and constituting a substantial addition to the occupier's wealth. This 'garden-city' life is made possible by the cheap and easy means of communication. This subject is discussed further in Chap. X (pp. 527–9), but it is necessary here to refer to the system and its effects.

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[1] See further, Chap. IX on *Industries*, especially the sections on *Home Industries* (p. 482) and the *History of Industry in Belgium* (p. 484).

Workmen are allowed cheap tickets for any distance up to 62 miles daily, the fare being reduced in proportion to the length of the journey. Thus a weekly season (six days) for a three miles' journey costs 9*d.* ($\frac{1}{4}$*d.* per mile); for 12 miles $\frac{1}{10}$*d.* per mile (1*s.* 2$\frac{1}{2}$*d.*); for 25 miles $\frac{1}{15}$*d.* per mile (1*s.* 7*d.*); and for 62 miles $\frac{1}{25}$*d.* per mile (2*s.* 6*d.*). These fares are actually lower than the single third-class return for the same distance, and are in consequence very widely used. Large proportions of the hands employed travel in by train every day; most of these come in from about six to nine miles away, but several come 15 miles and more, and in every large town there are some—perhaps 1 per cent.—who come over 30 miles. These, the latest figures available, date from 1896. In many cases over half the men employed at a given factory live outside the town in which it stands, and it is estimated that one-sixth of the whole working-class population use workmen's tickets in going to and from their daily work.

The social results of this habit are striking. In the first place, it tends to equalize wages in the town and country. Between 1846 and 1895 agricultural wages have doubled; this is certainly due in part to the competition of the factory for the labour of the country-dweller. Agricultural labour thus grows scarcer, and the result is a decline in the number of large farms, which are cut up into small holdings, so that the process of subdivision of the land is aided by the cheap tickets, which also enable these holdings to be taken by men whose work lies partly in the town.

Besides rendering labour extremely mobile, cheap travelling keeps urban rents down, by permitting country-dwellers to take up factory work without moving into the towns and by encouraging town-dwellers to move farther out.

The same cause clearly tends to check the flow of population to the town, to preserve country life and so to stimulate agriculture.

The practice of living in the country and travelling to work in the town adds a good deal to the physical fatigue of the average working-man, when taken in connexion with the long hours that prevail in Belgian factories. This is the worst feature of the system, which is on the other hand beneficial to the health of his wife and children.

The average wage per hour of the Belgian working-men is barely over half that of the English (actually 52 per cent.). In the building and engineering trades the Belgian wage is about 50 per cent. of the English; in the textile industries apparently about 62 per cent., and in coal-mining 66 per cent. (These figures are reached by averaging from a very extensive survey, but must only be taken as giving a rough indication of the conditions.) In railway work the weekly Belgian rates are between 50 and 75 per cent. of the English, though the Belgian works more hours in the week. Thus drivers get 25*s.* as against 45*s.*, firemen 17*s.*, against 30*s.*, platelayers, 14*s.* 6*d.*, against 22*s.*, signal-men, 15*s.*, against 26*s.*, and so on, the bulk of the labourers getting 12*s.* 6*d.* as against 19*s.* All the foregoing figures date from 1910, and Belgian wages had been then rising for some time, but they cannot have risen since then enough to distort the main points of the comparison between Belgian and English wages.

The low wage per hour is to a certain extent compensated (from the point of view of the workman's income) by a long working-day. The average Belgian working-day is 121 per cent. the length of the English, and in consequence the average Belgian worker's weekly income (time, 121 per cent., wage per hour, 52 per cent.) is 63 per cent. of the average English worker's. A table of the average day's work is given below:

3·79	per cent.	work	8 hours or less
6·88	,,	,,	8 to 9 hours
34·09	,,	,,	9 to 10 hours
15·44	,,	,,	10 to 10½ hours
17·48	,,	,,	10½ to 11 hours
14·08	,,	,,	11 to 11½ hours
6·15	,,	,,	11½ to 12 hours
2·09	,,	,,	more than 12 hours

This longer working-day (while it has a certain effect on the quality of the work done; see p. 257) is thus not nearly long enough to compensate for the lowness of the hourly wage. The deficit is made up to some extent by the work of other members of the family. Many of the wives of Belgian workmen work in factories; in East Flanders the number who do so is very high (one in three at Ghent, as against one in twenty at Liége; the infantile death-rate being 23·1 per cent. in Ghent as against 12·9 in Liége). Apart from factory-work the wife very frequently does home-work (lace, corsets, or gloves) or charing, or keeps a small shop or *cabaret*, so that of all the wives of Belgian workmen one in eight has an occupation of some sort. Another addition to the income is the almost universal piece of ground, which whether a mere town garden, an allotment, or a very small holding is worked at little expense and supplies a certain amount of food. It should also be observed that Belgium is a cheap country, prices being about 94 per cent.—to take a very broad average—of those normally current in England. The actual expenses of a Belgian family are, however, nothing like 94 per cent. of those of an English, because the Belgian has a much lower standard of comfort in such matters as warm and 'best' clothes, food, &c., and his wife is a conspicuously good housewife. A French student of Belgian society remarks that she is a much better *ménagère* than the Frenchwoman, and, *a fortiori*, better than the Englishwoman. Altogether, it seems safe to say that whereas the English minimum cost of living for a family of five in normal years is (again taking a broad average) 22*s.* 9*d.* per week, in Belgium it is 16*s.* 4*d.*, or 28·2 per cent. lower. But it must be remembered that this lower Belgian figure implies a standard of living which an English working-man would not consider tolerable. Finally, another method of supplementing low wages in Belgium is poor-relief, for which see below, under *Pauperism* (p. 269).

Low wages and long hours are related partly as cause, partly as effect, to a somewhat low standard of efficiency. The Belgian workman is ill-educated (see below, under *Education*) and does not read; he is less intelligent and alert than the workmen of neighbouring countries, more enslaved by routine, and more mechanical in his operations of mind and body. This is especially the case in the Flemish provinces, where the standard of education is much lower than in the Walloon. This is not due to any racial defect, as becomes clear when the Belgian is moved into a more favourable environment. Thus low wages, malnutrition, illiteracy, and low industrial efficiency work in a vicious circle, and to these must be added—also as simultaneously cause and effect—the fact that Belgian workmen do not combine to improve their position. The trade union movement is still in its infancy. This backwardness on the part of the men to assert their claims (which, like the other evils mentioned, is most marked by far in the Flemish provinces) is often ascribed to the activity of the Church in opposing the anti-clerical Socialist party and in encouraging a contented and resigned habit of mind.

HOUSING

Although there are half a million workers in the Walloon provinces, the only large towns are Liége, Verviers, Seraing, Tournai, and Namur; no other has as many as 30,000 inhabitants. The industrial population is not in fact concentrated in great towns, but distributed over wide areas. This is characteristic of the whole life of the Belgian (especially the Walloon) lower classes. It enables a large proportion of them to have gardens, and though their houses are in many cases poor and small they are not crowded into slums.

It is the general custom in Belgium for each family to live in a separate house. Large tenement buildings are practically confined to a few large towns, such as Brussels and Antwerp, and even here they accommodate an inconsiderable fraction of the population. For the whole country the average number of persons living in a house is five.

Urban houses may be conveniently divided into three classes; the best, inhabited by 10 to 15 per cent. of the working population, namely the best-paid workmen, and by clerks and petty officials, fetch rents of between 2*s.* 6*d.* per week and 10*s.*, this figure being reached in the expensive suburbs of Brussels and Antwerp. The second class of house, inhabited by skilled workmen or by unskilled workmen whose income is augmented by the earnings of their families, accounts for 30 to 35 per cent. of the working population; the rents vary from 1*s.* 8*d.* to 6*s.* per week. The third class contains 50 to 60 per cent. of the working population, namely the great bulk of the unskilled labourers and poorest classes. The rents vary from 1*s.* 3*d.* to 3*s.* 6*d.* per week. This third class includes the slums.

The houses of Class I have, as a rule, a street-frontage of 16 to 18 ft., and a depth of 25 or 30 ft., and almost always have a well-cultivated garden. They are generally three-storey buildings, not counting the almost universal cellar, which enables good stocks of coal, potatoes, &c., to be kept. Most houses share a single tap between three or four households, and closets are often shared by two or more houses. A house of this type, including about 140 square yards of land, costs £160 to £240.

Houses of Class II are imitations on a smaller and cheaper scale of Class I, and need not be separately described. They are generally only two storeys high.

Class III varies greatly in type and character. Generally speaking there are two rooms, a ground-floor living-room and a bedroom, possibly also an attic. Most houses have a cellar and a rain-water cistern, but few have a private water-supply or closet. Sometimes one tap or pump serves 50, 100, or even 200 houses, and one closet is shared by as many as ten families. The furniture is very scanty, but there is generally a garden containing perhaps a fruit-tree or two and a poultry-run, as well as a good stock of vegetables. Houses of this type are usually built in narrow streets or courts, but the almost universal gardens make these districts much less monotonous than the corresponding quarters of an English town. Slums are, of course, to be found in every considerable town, but houses of Class III are for the most part cleanly and respectable, often occurring in great numbers in those suburban tracts which surround the industrial centres of the Walloon country.

The lowness of rents is striking. Except in Brussels and Antwerp, a three-roomed Class I house may be had for 2*s.* 4½*d.* a week in the Flemish, 2*s.* 11*d.* in the Walloon towns; a four-roomed house of the same class costs about 2*s.* 7*d.* in the Flemish towns, 3*s.* 4*d.* in the Walloon. The customary attic and cellar give these houses a much larger accommodation than is suggested by the number of rooms, and houses of the other classes are even cheaper. Moreover, these houses have, as a general rule, gardens, and the tenant pays no rates or taxes.

The standard of wages is certainly very low in Belgium (see p. 255), but the rents are in proportion still lower. Thus a Belgian family earning 20*s.* to 30*s.* a week will spend 10 per cent. of its income in rent, whereas an English family with the same income will spend 16 per cent. of it in rent. A careful comparison of building expenses in Belgium and England shows that the same house which in Belgium costs say £250 will in England cost £345 (37 per cent. higher); one costing £140 in Belgium will cost in England £250 (80 per cent. higher); one costing £80 will cost in England £185 (130 per cent. higher). In general English prices seem to be nearly twice as high as Belgian; very seldom less than half as much again.

The causes of this cheapness are various, but the most important are: (1) very low wages in the building trade; (2) cheap bricks; (3) cheap means of transport. These three factors are clearly connected; bricks can be had cheap because transport is cheap, and the cheapness of labour in general affects both these. But other factors exist. Building land is probably cheaper in Belgium than in England, though agricultural land is far more expensive. This is partly due to the ease with which workmen travel to and from their work, and consequently live in semi-rural districts to an extent impossible in England. In part it is also due to the fact that building land is much subdivided, each workman tending to own his house whenever possible.[1] This tendency raises the price of agricultural land, owing to the competition of buyers, but it seems to lower that of building land, owing perhaps to the elimination of the speculative builder.

In spite of the cheapness of housing in Belgium overcrowding is frequent. In houses of Class I it is rare except in the Flemish towns and the Centre district; in Class II the proportion of overcrowded houses rises 30 per cent. in the small Walloon and Flemish towns and over 20 per cent. in the Liége and Charleroi districts. In Class III the percentage is nowhere below 30, and in the smaller industrial towns rises to 75.[2]

The rural houses of the labourers and smallest peasant cultivators are, as a rule, single-storey buildings, generally with an attic. A single bedroom is the rule; if there is another it is generally used for storing implements or food for the live stock, the latter being kept in outhouses. Overcrowding is therefore not infrequent in rural cottages. These houses were formerly made of laths and clay, with thatched roof, but this type is being superseded by brick (or in quarrying districts stone) buildings. The older houses are damp and insanitary, the floor being generally of beaten earth and the water-supply seldom pure. Few Belgian villages have any sort of proper sewage system.

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[1] Of Class I houses, 20 per cent. are owned by their occupiers; of Class II, 4·74 per cent.; of Class III, 1·24 per cent.

[2] A house is technically overcrowded when it contains more than two inhabitants per room.

Gardens are almost universal; their size varies greatly, but 600 square yards is a common figure. Rents also vary widely, but a cottage with 120–1,200 square yards of land seems to average £4 to £6 a year (1*s.* 6*d.*–2*s.* 3*d.* a week), which includes outbuildings. In some regions, however, rents are a good deal lower than this. They are, as a rule, higher in the Walloon than in the Flemish provinces.

Housing legislation may be said to begin with the Act of 1889, which provides for (*a*) a number of local committees to endeavour to improve housing conditions; (*b*) the reduction by one-half, in the case of working-men, of the Government duties on the sale or mortgage of property; (*c*) arrangements by which a workman can borrow nine-tenths of the money required to build his house (including the cost of the land) at a low rate. The local committees are meant to encourage the building of workmen's houses, to study health conditions, and to promote thrift. Their efficiency depends largely on their *personnel*. The loans advanced to workmen intending to build come ultimately from the National Savings Bank, through the mediation of local associations whose shareholders act as guarantors for the sums lent. The rate of interest paid by the borrower in no case exceeds 4 per cent., and the capital is repaid in instalments spread over not more than twenty-five years. This transaction is usually combined with a scheme of life insurance. The result of this legislation is that practically any workman who desires to do so can become the owner of his house, and that 'cornering' of town land is hardly possible, nor is it easy to charge unduly high rents when the tenant is assisted by the State to buy his own house. The condemnation of insanitary houses is left in the hands of the local burgomaster.

The main features of Belgian housing are thus the general cheapness of rent and the high proportion of houses owned by their occupiers; the absence of extreme concentration and the general diffusion of gardens; and the high standard of housing—higher than for instance in England—among the well-to-do artisan class.

ELEMENTARY EDUCATION

One-fifth of the adult population of Belgium can neither read nor write. This enormous number of illiterates is naturally contributed chiefly by the working-classes, of which 21½ per cent.—one man in five, and one woman in four—are illiterate. Taking the working-classes of the country as a whole, of those over 40 years of age 40 per cent. are illiterate; between 21 and 40, 18 per cent.; between 10 and 20, 13 per cent. These figures point to a steady improvement in the standard of education, but that standard remains even to-day surprisingly low. The distribution of illiteracy is also remarkable. It affects 11·75 per cent. of the working population of the four largest towns (Brussels, Antwerp, Ghent, and Liége); 17·34 per cent. in the Walloon provinces, excluding Liége; and 34·69 per cent. in the Flemish provinces, excluding Brussels, Antwerp, and Ghent. Illiteracy is thus just twice as common in the Flemish-speaking as in the French-speaking area.

This state of things is due in part to the *lutte scolaire*, the long-standing educational war between the Catholics and Liberals. The law of 1842 enforced the teaching of religion in all schools and placed it in the sole charge of the clergy, who were also allowed to control moral teaching and to veto the use of particular books. In 1879 the Liberals, who had come into power the year before, passed an Education Act by which the schools passed entirely under secular control; grants were only given to schools which conformed to certain conditions; and religious education in school hours was abolished altogether, though ministers of religion were permitted to give it in the school buildings, to scholars of their own communion, at other times. This Act aroused the whole Catholic population to unanimous and organized opposition. The Catholics boycotted the State schools, and made great efforts to establish schools of their own in every village. A general campaign was instituted against all persons with Liberal views, and was followed by a counter-campaign of the Liberals against the Catholics; so that Catholic employers systematically discharged Liberal workmen, Catholic landlords evicted Liberal tenants, Catholic charitable organizations refused assistance to poor Liberals, and vice versa. In this struggle education suffered severely. All teachers over whom the Catholics had any sort of influence left the State schools, creating thousands of vacancies, which were filled by unqualified persons; while the new Catholic schools, of which 2,000 were founded in twelve months, were staffed largely by sacristans, choirmen, Sunday school teachers, and even domestic servants.

After five years of chaos the Liberals were finally overthrown in 1884. The Catholics immediately reversed the policy of 1879, and henceforth the teaching of religion, though not compulsory, was everywhere permitted in school hours, with the proviso that children might be exempted from attending these classes on the written application of their parents. Grants were made to Catholic schools which submitted to Government inspection, and most of the State training colleges were superseded by others controlled by the Church. This new position was and still is violently opposed by the Liberals, and feeling on the education question (as on the Flemish question) runs so high that it is difficult to discover what the facts are. The Catholics maintain that the standard of education is the highest which can be reached in the circumstances; the Liberals declare that it is not only admittedly low, but that the official statistics present it as much better than it really is; an allegation which is not borne out by extensive private investigations. So far as the facts can be ascertained they are summarized below.

Elementary education is free, and not compulsory. Belgium is the only European country, except Russia, which has no compulsory system of education; such a system is advocated by the Liberals but opposed by the Catholics as hostile to the Belgian spirit of liberty and likely to lead to Government control in the schools. The proportion of children who never go to school is officially estimated at 10 per cent.; the Liberals estimate it at 16 per cent. It is certainly highest in the Flemish provinces, lower in the Walloon, and lowest of all in Luxembourg. In large towns attendance is almost universal; in the country districts, especially in Flanders, it is alleged that about half the children hardly attend at all, and it is certain that those who do attend do so with long intervals for helping at home and in the fields, and that the average number of days' attendance in the year is well below 200. Education in the country also suffers because, whereas labour in factories is forbidden in the case of children under twelve years old, there is no such restriction for agricultural labour. Consequently the average town child stays at school till he is eleven or twelve, while the country child leaves as a rule earlier than this. Only 10 per cent. of the total scholars are over ten years old, as opposed to 16 per cent. in England.

There are three main types of school. Each *commune* must have at least one school (with certain exceptions); the number of teachers, the methods, hours, holidays, appointments and dismissals, &c., are controlled entirely by the *commune*. All teachers must be certificated and paid a minimum salary, and the Government issues a list of subjects which must be taught, but this list may be added to. The result is that the 'communal' schools vary greatly in number and efficiency. Where the communal authorities are interested, as in Antwerp, Ghent, and Brussels, the standard is high; in many places it is very low.

The second type is the 'adopted' school, which is a school officially authorized by the *commune* to supplement the work of the communal school. It undertakes to provide free education, the *commune* being responsible for the salaries of the teachers. Government inspection excepted, the adopted school is an autonomous institution, and exists as such in virtue of a contract, the 'contract of adoption', made between it and the *commune*. These schools are Catholic institutions.

The third type is the 'adoptable' school, i. e. a Catholic school identical with the 'adopted' except that it has no contract with the *commune*, and in consequence receives no payment from it; but all three types receive the same grants from the provinces and the State.

Of the total number of scholars, 57 per cent. attend communal, 24 per cent. adopted, and 19 per cent. adoptable schools. The attendances at communal schools are, however, declining, owing partly to the influence of the Catholics and partly to the economy which local taxpayers effect by encouraging the Catholic schools.

The cost of education is very low, working out at £1 13*s*. 1*d*. per child, as opposed to £3 7*s*. 2*d*. in England

and Wales. This is partly due to the large amount—perhaps 25 per cent. of the whole expense—contributed by private money, but it is much more due to the small number of teachers (the average size of a class is forty-nine children) and the very small salaries they receive, generally not enough to live upon, a fact which results from the prevalence of unsalaried teaching by members of religious orders, and from the low standard of the training colleges.

In general it must be said that the primary education of Belgium is much below the European average. The whole of education suffers severely from being made a question of party politics, and even more from being made the field for a religious battle. Catholic and Liberal teachers alternate in trying to undermine the partisan principles inculcated by the other, and the children remain untaught. But much of the teaching is good, and the very high percentage of illiteracy is due not so much to deficient teaching as to mere non-attendance.

There is a large class of schools known as *écoles gardiennes*, and in type intermediate between a kindergarten and an infant school. These are a Catholic enterprise; the teaching is mostly done by nuns for a nominal salary, and their success is largely due to the general feeling that the necessary minimum of instruction can be gained by their means without attending the ordinary schools at all.

Continuation schools exist chiefly to give the rudiments of education to those who have not received them in the elementary schools. But technical instruction (e. g. in domestic economy, agriculture and industry) is also given, as it is more fully by the technical schools. The latter are well organized and flexible; they vary from commercial colleges with a three years' course to simple courses of lectures.

These technical schools would be very valuable but for the very low initial state of education prevailing among the pupils. There are also numerous private schools for training apprentices in various trades; these are subject to no control, and may easily degenerate into a means of employing child-labour.

PAUPERISM

Official charity in Belgium is controlled for the most part by the communal councils, and as it is practically undirected by any central policy it is impossible to generalize about the methods and effects of its administration. This lack of co-ordination applies not only to the individual *communes* but to the various types of body nominated by them, viz. the *Commissions des Hospices* which deal with indoor relief, and the *Bureaux de Bienfaisance*, which deal with outdoor relief. Any given case comes under one of six authorities: the local *Commission des Hospices*; the local *Bureau de Bienfaisance*; the communal council itself, if the foregoing bodies have not sufficient funds in hand to meet the case; the common fund of the *communes*, whose purpose is to distribute the burden of relief equally among rich and poor *communes*; the province; and the State. The relative liability of these bodies depends upon how the case is classified (e. g. pauper-lunatic, aged and infirm, foundling, &c.), and this results in constant disputes as to the classification of cases and the authority responsible for them. To this source of confusion must be added the fact that each *commune* may have its own policy, customs, or ideals with respect to the administration of relief. It follows that the state of Belgian poor-relief is as difficult to describe as it is unsatisfactory in practice.

The sharp distinction between paupers and the rest of the population which is the basis of English poor-relief is not drawn in Belgium, where relief is given, often in very small amounts, to persons who though poor cannot be described as destitute. It is often given to families in receipt of low wages, especially where the families are large. Thus in Ghent in 1906, a prosperous year, nearly a quarter of the relief given was to supplement low wages; and the same is true of many other towns. The doles so given are so small and so irregularly given that they have no visible effect on the general level of wages, but they have local effects, and it is certain that in the towns where this custom prevails the rate of wages tends on that account to sink.

Some account must be given of the various bodies charged with the administration of relief. *Bureaux de Bienfaisance* exist in all the *communes* and where there is no *Commission des Hospices* (i. e. in all but about 300) are responsible for all public relief. These give relief to about 6 per cent. of the total population, but the amount given in each case is on average very small. The total amount spent per head of the population is highest in East Flanders, and lowest in Luxembourg: in general the Flemish provinces show a larger expenditure in charity than the Walloon, though the sum paid per person relieved is higher in the Walloon districts, so that the number of paupers per cent. of the population is much lower in the latter (e. g. 2·08 per cent. in Luxembourg as against 9·04 in West Flanders).

The *Commissions des Hospices*, of which there are 334, confine their attention to indoor relief; their small numbers make them greatly inferior in importance to the *Bureaux de Bienfaisance*. Their income is derived from endowments, and they spend it in maintaining poor-houses which are run for the most part by sisters of religious orders at a very cheap rate, so that the cost per head of the inmates is extraordinarily low. These inmates are occupied in lace-making, knitting, gardening, &c., the produce being sold for their benefit. They are admitted on the *communes* paying the necessary charge for their maintenance, a charge whose smallness makes the *communes* often prefer this method of disposing of their paupers to the system of outdoor relief.

Lunatic asylums, now almost entirely controlled by the *Frères de la Charité*, are worked on very much the same system. There is also a lunatic colony at Gheel, where the patients are boarded out with the peasants.

There are two State labour colonies of a semi-penal kind. That of Merxplas is called a *Dépôt de Mendicité*, and its inmates are either confirmed beggars (a penal offence in Belgium) or bad characters. There are some 5,000 of them, consisting of the lowest types of the population; they are governed by military discipline and guarded by soldiers, and a man who has once been detained there very seldom returns to a decent place in society. The number of inmates has doubled since 1898. The Hoogstraeten colony is called a *Maison de Refuge*, and chiefly harbours the old and incapable. In this case the number of inmates, about 3,000, seems to be fairly constant. They are recruited from beggars, but only from those who are considered to be destitute through no fault of their own.

There is also an enormous amount of charity under the control of the Church, which provides for almost every stage of the existence of a poor family and is administered by the religious orders. Institutions of this kind are most widespread in the Flemish provinces. A great deal of charity is organized by laymen under the auspices of the Church or of a political party. Relief proceeding from all institutions of this type has an avowedly partisan character, and is intended to attach the recipient to the Church or to a party.

The main weaknesses of poor-relief in Belgium are: (1) its entire lack of centralization or co-ordination. This not only causes friction between innumerable different bodies, but it results in the richer *communes* having more to spend in relief, and therefore doing much more than the poorer, a state of things which reverses the proper position. In a rich *commune* sometimes 40 per cent. of the population receive doles. (2) The fact that much of it is administered with ulterior motives, political or religious; and (3) the fact that it is largely given in relief of low wages. These two faults are responsible for the failure of Belgian poor-relief to put a check on poverty, or indeed to do anything but augment it while palliating it, and while at the same time undermining the independence of the recipients.

CHAPTER VI

THE FLEMISH QUESTION

THE fundamental problem of Belgian internal politics is a direct result of its division into two racially or rather linguistically distinct areas: the Flemish country in the north, and the Walloon (French) country in the south. The problem consists, primarily at least, in the conflicting claims of the two languages. On the one hand, it would appear that unity of language is, if not essential to national life, at least an object worth almost any sacrifice; on the other, the Flemings have nowhere more clearly shown their innate conservatism than in their refusal to fall in with such a programme by adopting French. The history of this gradually emphasized refusal is the history of the *Mouvement flamand*, the movement by which the Flemish portion of the Belgian State has arrived at a self-consciousness often exaggerated, but perfectly genuine and demanding a treatment no less respectful than any other spontaneous expression of national consciousness.

This chapter outlines the earlier history of the movement and indicates some of the main features of the problems raised by it; but the whole subject is much too complicated for exhaustive treatment in so small a space.

HISTORY OF THE FLEMISH MOVEMENT

The germs of the Flemish movement can be traced back as far as the last fifteen years of the eighteenth century, in a work by an advocate of note, named Verlooi, on the neglect of the mother tongue in the

Netherlands (*Verhandeling op d'onacht der moederlyke tael in de Nederlanden,* 1788). The author deplores the Gallicism which had since the sixteenth century occupied the whole attention of the upper classes: he calls attention to the present poverty of the Netherlands in all the arts, which he ascribes very largely to this Gallicism and to the blighting effect of an uncongenial and foreign education on the youthful mind; and he joins hands with the anti-French reaction which was taking place in Germany and Scandinavia, desiring that the Flemings should become conscious of their position as a member of the Teutonic family of nations.

In this work the leading ideas of *Flamingantisme* are clearly expressed: anti-Gallic feeling, the desire to make Flemish the literary and official language, as well as the more popular dialect of its native country, and a distinct, though as yet undeveloped, Pan-Germanist tendency (for which, however, see below, pp. 290–6).

The development of these ideas was checked by the French Revolution and the conquest of Belgium by the French. Revolutionary France, true to her doctrinaire character, declared war on all dialects, with a view to making Parisian French the universal language, to be imposed forcibly where necessary. Low German and Flemish, as well as Walloon, came under the rubric of dialects, and the imposition of French, begun in 1794, was clinched in 1803 by an edict ordering that all official documents, even those recording transactions between private persons, should be written in French.

Education in the now French Netherlands, when it was reconstituted after the chaos of the French invasions, was also arranged on the basis of the French language, and to the end of the French occupation Flemish was confined to the primary schools. The publication of Flemish journals was forbidden till

1812, when they were permitted to appear with a French translation; and books in Flemish seem not to have been published at all, owing to the inability of the French censors to discover whether they were inoffensive.

The effect of these measures appears to have been a deepening cleavage between an educated class, recruited from the upper strata of society and the *bourgeoisie*, speaking French and enjoying a monopoly of the press, and an uneducated peasantry, speaking Flemish and debarred from literature in almost every form. With the latter class, however, the Catholic priesthood threw in its lot: devotional literature kept alive the germs of a literary Flemish, and various small societies maintained 'chambers of rhetoric' for the performance of plays and competitions in declamation on set themes. In this cleavage between the French- and Flemish-speaking classes, directly due to the policy of revolutionary France, is to be sought the origin of the distinction between Walloon Liberalism and Flemish Catholicism, as the conflicting political ideas of nineteenth-century Belgium.

The union with Holland occasioned a lively outbreak of linguistic controversy. Dutch writers proposed that Dutch and Flemish should be fused into one language and made into the national idiom, whose use should be obligatory for all official purposes. Thus for the first time *flamingantisme* appeared as a conquering and intolerant movement, an appearance easily explained by the political function of the new united Netherlands as a barrier against France. Walloon writers replied with pleas for toleration, insisting on the importance of the Gallicism of the Belgian upper classes as a *fait accompli*. The Government compromised by yielding to the *fait accompli* in the matter of administration, and reintroducing Flemish so far as possible in education. Thus a normal school founded at Lierre in 1817 was entirely Dutch and is still a centre of the Flemish movement. In the same year secondary education was reorganized and Flemish adopted as the medium of instruction in ancient languages. Private colleges directed by the clergy, however, continued to use French, and female education and the world of fashion clung to that language throughout. The universities founded in 1816 at Ghent, Louvain, and Liége adopted Latin as the language of instruction and examination ; but at each alike a centre of Dutch- or Flemish-speaking instruction gradually arose, in spite of local opposition, through the efforts of individual professors, encouraged by the Government.

The position of the Dutch language with regard to popular feelings was in general not good. It made any real headway only in the towns of Antwerp and Ghent, which had gained in prosperity by the annexation, and here it was mostly popularized by a handful of Belgian Catholics, while the manufacturers, who welcomed the liberal and Protestant policy of the king, and regarded the union as the foundation of their fortunes, despised Dutch and retained French. As heretics the Dutch were disliked by the Flemish Catholics ; but they were still more disliked for their political energy and passion for reform, coupled especially as this was with a deep-seated contempt for the Belgians as an inferior race. The clergy were for all these reasons peculiarly hostile to the Dutch and their language, and the growing dislike of all things Dutch seems to have had a detrimental effect even on the use of Flemish ; thus certain journals, in order to emphasize their anti-Dutch sentiments, gave up publishing articles in Flemish. At the same time there was a powerful body of French Republicans living in exile in Belgium and keeping alive the French tradition among the now thoroughly Gallicized upper classes.

In this confused state of things the 'father of the Flemish movement', John Francis Willems, was occupying the position of keeper of the city archives at Antwerp, and devoting himself to the study of languages and history. He had already acquired a certain reputation in these studies, and as a literary man before the revolution of 1830.

It is the fashion among Pan-German propagandists to represent the Revolution as a Walloon movement, backed by France, and culminating in the re-enslavement of the Flemings to a régime hardly distinguishable from the tyranny of the revolutionary French government. Just as the defeat of Varus and the Battle of Courtrai are regarded by Pan-Germanists as precursors of Sedan, incidents in an eternal Franco-German war whose essence never changes, so the quarrel between Belgium and Holland must, according to the Pan-German philosophy of history, be made into a conflict between Pan-Germanism and Pan-Gallicism. German writers therefore maintain that the moving spirits in the Revolution were Walloons, and that they carried the Flemings with them by force. Antwerp was besieged by the revolutionary forces: and Antwerp stands for *flamingantisme.* It follows that *flamingantisme* was against the Revolution and remained pro-Dutch to the end.

The defect in this argument is that the forces besieged in Antwerp were not the Flemings, risen to resist the Walloons, but the troops of the King of Holland; and they were besieged chiefly by the Flemings themselves. In point of fact the Revolution, which began in Brussels, was taken up with at least equal enthusiasm in the Flemish provinces: indeed it spread to the provinces of Dutch Flanders and Dutch Limburg, which entirely severed their connexion with Holland and were only returned to that country by the Powers in order not to humiliate the King (see p. 144). Linguistic patriotism had indeed little if anything to do with the Revolution, which was very largely caused by the religious feeling of the Catholic Flemings against the Protestant Dutch. The importance of this religious feeling is recognized even by some of the Pan-German propagandists, who accordingly proclaim the necessity of ‘ setting the Flemings free ’ from the church of which they are the ‘ dupes ’.

In connexion with the same subject it may be recalled that a decree of 1823, the culmination of the linguistic policy of the Dutch government, established a complete dualism between the Flemish and Walloon districts. The ‘ national language ’ (i. e. Dutch, differing only dialectically from Flemish) was to be the sole recognized and legal language for public business in Limburg, Flanders, and Antwerp, and in the *arrondissements* of Brussels and Louvain : persons ignorant of the national language were not to become candidates for any public office in these districts and could only stand for office in the Walloon districts. Exactly the same regulations applied, *mutatis mutandis,* to the French-speaking provinces of the south. This artificial and violent attempt to propagate Flemish (for such was the aim of the decree : its effect in the Walloon area was negligible, since that area never has contained any considerable number of Flemings) met, as was natural, with great opposition. It ruined all the advocates at Brussels who were unable to speak Flemish ; it put the Gallicized upper classes of Belgium in the position of aliens in a country whose administration now for the first time passed entirely out of their hands. Even those who knew Flemish knew it as a local dialect only, and found the literary Dutch of the law-court almost a foreign language. It was only in the north (Antwerp, Malines) that the local dialect could pass as tolerable Dutch.

This linguistic policy of the Dutch government undoubtedly did much to cause the Revolution. ‘Freedom of language’ was one of the chief catchwords of the period 1825–30; and freedom of language meant primarily the liberty to use one's own language in court. Naturally this was most urgently demanded by the French-speaking professional classes in Flanders. The Walloon provinces contribute comparatively few to the long list of protests against the Dutch policy.

It is highly instructive to compare this proposal and its results with the proposals mooted by modern *flamingants* (cf. p. 289). These modern proposals have, of course, the whole history of the Flemish movement behind them, which makes a very great difference to their feasibility.

The historian of the Flemish movement (M. Paul Hamelius: *Histoire du Mouvement flamand*, 1894, p. 56) sums up the situation in these years as follows: ‘Their aim was to announce their dissatisfaction, to obtain the discharge of ministers, parliamentary government and religious peace. The language-question had no appreciable influence on public feeling or on the petitions; but the malcontents were glad to find in it an additional argument against the *régime* they detested. Hence the French language was more eagerly defended by the Flemings—who did not speak it—than by the Walloons.’ At the same time the supercilious attitude of the Dutch Parliament towards French-speaking members certainly did alienate the Walloon provinces.

In 1829–30 the Dutch king's linguistic policy underwent a certain modification in deference to these protests. A decree of June 4, 1830, permitted pleas to be made in French when the judges understood that language. 'This decree', says M. Hamelius, 'removed all grievances. Three months later, Belgium revolted.' This is the conclusive proof that the question at issue was not simply that of 'freedom of language'.

The provisional government of 1830 declared French the sole official language. This extreme course was defended by the argument that Flemish (and German) varied so much from place to place that no uniformity was possible except in French. In point of fact it was certainly due to the hatred of all things Dutch, which was now given full scope. Dutch professors were practically expelled from the universities; the normal school at Lierre was in effect suppressed; the reaction in favour of French, regarded as the national language expressing Belgian liberty as against Dutch domination, was complete.

The respective situation of the languages was defined by Art. 23 of the Belgian Constitution as follows: *L'emploi des langages usitées en Belgique est facultatif; il ne peut être réglé que par la loi et seulement pour les actes de l'autorité publique et pour les affaires judiciaires.* This article gives to the legislative, power to choose one or more official languages; to the executive, power to impose this choice upon its agents; to private individuals, the right to use whatever language they please; while upon the administrative as a whole it lays the obligation of adapting itself to any one of the three languages which may be demanded. Civil servants of all kinds, teachers and officers of the army, must use the language dictated by their departmental superiors. These chaotic liberties and obligations have naturally come into continual conflict, and produced a state of things described not unjustly as linguistic anarchy, the effect of which did little to diminish that mutual intolerance of French and Flemish which was already in the air by 1830. But at the time it was felt that complete uniformity of language was the one possible basis of the State; and that, if three languages were spoken within the State, the only solution was a legal fiction to the effect that all three were indifferently spoken by every member of the State.

This fiction could not be maintained, and already in 1834 Charles Rogier took up the view that French must be the language of Belgium, and that the army, the administrative and the judiciary must be supplied from the Walloons and Luxembourgeois: Flemings must learn French. This view gradually gained ground, and Flemish, which had never, since it refused to assimilate itself to literary Dutch, become a standardized uniform and literary language, seemed bound to sink into the position of a mere lower-class dialect or group of dialects.

The event was precisely the opposite. The Dutch rule had not produced a Flemish literature, but it had stirred the waters; interest in Flemish had sunk deep into the generation which grew up under the Dutch régime, and the results began to appear almost immediately after the Revolution. 1834 saw the initiation of the Flemish Movement by Blommaert and Willems, the latter having now embarked seriously on the philological study of Flemish, a study initiated in 1821 by Hoffmann von Fallersleben, who, under the influence of Jacob Grimm, had come to Leyden and collected a vast quantity of old Dutch poems, proverbs, plays, &c. In 1834 Willems, who was already in correspondence with Grimm, published a modern version of the old Flemish fable, Reynard the Fox (*Reinaert de Vos*), with a preface urging the necessity of keeping alive the original language in which the tale was composed. An annual was founded for the publication of studies in Flemish literature, and a society was formed with the motto *De taal is gansch het volk* (language is the whole of nationality) and an organ, in the form of a supplement to the *Ghent Gazette*. Willems now energetically continued his philological researches, which he regarded as a means to the education of public opinion and the establishment of a Flemish national consciousness. Friends and pupils gathered round Willems at Ghent, which thus became the centre of the Flemish Movement; and in 1837 the first number of his review, the *Belgisch Museum*, appeared. Ten years later Willems died. The same year saw the death of Ledeganck, the disciple of Willems, who did more than any other one man to create the new Flemish literature which Willems first conceived.

Among the leading enterprises of Willems and his party were the reform of the spelling and the abortive movement for the recognition of Flemish as an official language. Two hundred and forty petitions, thanks to the organization of Willems, were sent in from different *communes*, dealing with the latter question, in 1840. There was little popular feeling on the subject; the agitation was almost entirely due to the activity of a handful of philologists; but it met with a considerable degree of success, and a great congress in Brussels in 1844 fairly launched the movement in the eyes of the world.

But for eleven years more, though it never ceased to gather strength, the movement was actually no more than a literary, almost a dilettante, concern, producing a considerable literature but never becoming a political force. It entered the field of politics, for which it had so long been preparing itself, only in 1855, with the manifesto of John Van Rijswijk, a poet of Antwerp. This intemperate document, which exhorted the Flemings to aspire to a higher status than that of ‘negroes on a plantation or Indians in an English colony’, at last touched public opinion and induced

De Decker, the *flamingant* minister, to attempt a reform in favour of Flemish. A commission to consider such reforms was accordingly appointed in 1856; unfortunately it consisted entirely of literary men, unversed in practical politics and fanatical adherents of the Fleming party. The reports of the commission were violent and unpractical, and De Decker, in spite of his entire goodwill towards the cause of Flemish, was unable to support them or to use them as a basis for legislative proposals. The result was a decided embitterment of feeling on both sides; and the men who were engaged in administering the new Belgium, the régime of 1830, felt that the Flemish Movement was a retrocession towards the exploded principles of the 1815 settlement. The only practical outcome was a literary convention (1858) with Holland, protecting the rights of authors and establishing the free exchange of printed matter.

About 1860 the heightened feeling found expression in an official controversy arising out of the reports of the commission. The minister, Rogier, refused concessions to Flemish, mainly on the ground that the Flemings themselves had abandoned the use of their language. His arguments were very severely handled by the Flemish party, and in fact he quite failed to gauge the deepening impression made year by year by the Flemish renaissance.

In 1860 a proposal was made to substitute a German for a Dutch orientation of the Flemish Movement, to introduce German, as a language of wider value and more cosmopolitan possibilities, among the Flemings much as French had been introduced among the Walloons. In the abstract the principle seemed reasonable; but the separation between Flemings and Germans had for centuries been complete, and this political and religious separation cut much deeper in reality than the linguistic separation between Flemings and Walloons. The Flemings, in short, felt German to be a tongue no less alien than French, and they had at least grown accustomed to French, since the fourteenth century, as they had never grown accustomed to German.

In the early sixties a project was mooted for uniting all the Low German dialects into one large confederation as against High German on the one hand and French on the other. This was the nearest approach to Pan-Germanism on the part of the *flamingants* of the period; but it naturally collapsed after the wars of 1866. It never seems to have been taken very seriously.

A second commission on the Flemish question presented its report in 1866, ten years after the first. This, like the earlier document, accused the present régime of violating Article 23 of the Constitution, and showed a distinct leaning towards the Dutch régime of 1815. It argued that the practical unity of language in Belgium delayed the formation of a true nationality by keeping the Flemings outside public life, and thus reduced Belgium to a parasite of France, a state with no character of her own, that it created in Flanders two mutually hostile social strata, and that the present state of affairs, besides being inexpedient, was unconstitutional. The failure of this report was only the signal for further efforts on the part of the Flemish party.

Two *causes célèbres* brought into prominence the question of the rights of languages in the courts. In 1863 Karsman, a journalist of Antwerp, appealed against a fine of 5 francs to the court of Brussels, where he claimed under Article 23 the right of pleading in Flemish. The claim was rejected under an interpretation of certain decrees of 1830, and violent protests were made by Flemish journals and the leaders of the movement. A more serious case arose in 1866, when two alleged murderers, Coucke and Goethals, were unable to communicate with their counsel, owing to their ignorance of French and his of Flemish, except through a Dutch interpreter, and were condemned and executed on the strength of a remark in Flemish overheard—it was alleged, incorrectly—by a Walloon policeman. The Flemish party proposed in consequence an amendment to the law controlling the administration of justice to the effect that in the Flemish-speaking area no person ignorant of Flemish should be appointed to judicial functions. The Government maintained that this was a rule already followed in practice, and the amendment was thrown out.

If 1830–55, the period of literary and philological work, is regarded as the first phase of the Flemish Movement, and that beginning in 1855, the period of unsuccessful political efforts, as the second, then the third phase, the period of political successes, may be said to begin about 1870, when the Catholics came into power.[1]

This third period opened with two leading events. In 1869 the representative for Ghent called the attention of the Chamber to the social, moral, and intellectual backwardness of the Flemish provinces. In birth-rate, in literacy, and in the absence of criminality the Walloons were greatly superior. This he attributed to the absence of an education and public life open to the Flemings in their own tongue, and he concluded 'the Flemish question is neither a literary nor a political question; it is a social question'.

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[1] The connexion between the Flemish Movement, in its later phases, and Catholicism has always been very close, and is likely to remain so in the future. An antithesis is often expressed between the Liberal party as socialist, international, anti-clerical and *fransquillon*, and the Catholic party as conservative, nationalist, religious and *flamingant*.

Secondly in 1872 another sensational trial occurred. A man wished to register the birth of his child in Flemish. The registrar refused, and the man was fined 50 francs for failing to register. This was clearly against the text of the constitution, and he appealed; but his appeal failed because he insisted on its being made in Flemish. Both these events provoked great numbers of petitions, and aroused much feeling. The result was the judicial reform of 1873. An accused party, according to this law, could claim the right to engage a counsel speaking his own language, and the case must be conducted in this language within certain limits. These reforms, though very meagre, were accepted as the earnest of more to come.

In 1878 a new law secured further rights for Flemish in the administrative sphere (proclamations, police-court cases, &c.), but its application was hindered by the general ignorance of written Flemish, which made it equally difficult to write or to read a Flemish proclamation correctly. Reforms of education were accordingly demanded, and were secured by a law of 1883, followed by the foundation of a Flemish Academy at Ghent in 1886; and a second judicial reform was passed in 1889, which made the use of Flemish practically universal for judicial purposes in the Flemish area.

Since that date further legislation (1897) has strictly equalized the position of the languages in the schools; but Flemings claim that they are still at a disadvantage in the courts. Here French still apparently prevails by the force of inertia, owing to the fact that advocates have studied the law in French; and the Flemings demand that Flemish should be made the obligatory language of civil procedure within its own territory. This reform, again, would require the institution of law studies in Flemish in the universities.

THE PRESENT STATE OF THE FLEMISH PROBLEM

The French geographer Onésime Reclus predicted that the rising tide of French would one day submerge the Flemish portion of Belgium. This can never now happen. The Flemish Movement has gone too far and has entered too deeply into the consciousness of the northern Belgians to permit of any such solution. The 'one-language' solution of the Belgian problem seemed quite possible to Charles Rogier in 1834; no serious statesman of later generations has regarded it as conceivable.

An alternative would seem to be the 'bilingual' solution, that is, the adoption of the two languages as equally official on the understanding that the bulk of the population should speak both, thus creating a bilingual Belgium. Flanders is to some extent already bilingual, though the extent is small, amounting to between 1·7 and 5·25 per cent. in different provinces. The Walloon provinces, on the other hand, are only bilingual to the negligible extent of 0·03 to 0·5 per cent. To convert the Walloons to bilingualism would be an absurd proposal, though it has often been seriously entertained. Within very narrow limits something has been done already, and more may be done in the future, to spread the knowledge of Flemish among educated Walloons; but it is quite certain that such a movement can never really affect the body of the population. Belgium will never be a bilingual country.

A third alternative is the sharp and complete separation between the two geographical divisions of the country, such that all state and other officials in the north should speak Flemish and that all business in this division should be transacted in that language, while French occupied the same position in the south. 'In Vlaanderen Vlaamsch' has been a catchword of the *flamingants*, and appears to indicate some such ideal. It is, however, clear that this separatist policy would tend to make all intercourse between the two districts impossible, and would exaggerate all the worst features of the racial cleavage. The Walloon colonies in the north and the Flemish colonies in the south would become more than ever aliens in a foreign land, unable even to obtain justice in their own language, except by an elaborate system of safeguards which would entirely destroy the attractive simplicity of the arrangement.

The most reasonable proposal seems to be a restricted bilingualism which should make a knowledge of both languages obligatory for all officials. ‘This is the only practical end at which we can aim, the only means of which we can hope to effect a union between the two races’ (Daumont). According to this conception, knowledge of Flemish should be obligatory, and its employment universal, throughout the Flemish provinces, in schools, universities, and hospitals, by officials of all ranks, barristers and solicitors, judges and jurymen, engineers and technical experts; all official publications should be in Flemish, and Flemish should be used as much and as completely by the upper and middle classes as by the lower. On the other hand, the officials concerned should be acquainted with French so as to safeguard the interests of persons ignorant of Flemish.

This programme seems to be adopted by the present leaders of the *flamingants*. It involved the same supremacy for Flemish in the north which is now enjoyed by French in the south; and it would clearly, for that reason, bear hard upon the *fransquillons*, the French-speaking residents in Flanders, whom it will frankly place in a position of inferiority. Signs are not wanting that the Flemish Movement, which has developed a more and more fanatical spirit, is willing to take up an attitude of forcible propagandism and persecution, and to demand, not legal equality, but actual privileges, for Flemish.

Such an attitude is not mitigated by the language of French and Walloon writers. Such men as Maeterlinck[1] have set themselves deliberately to ridicule the movement, and have obtained the ear of the French, and in great part of the Walloon, press; and in spite of the provocative attitude of the *flamingants*, it is impossible, in studying the literature of the movement, to escape the conviction that the *fransquillons* are responsible for most of the high feeling and bad blood which exist between the two parties.

The hostility of the Flemish party to *Fransquillonisme*, i. e. the use of French by the *bourgeoisie* of Flanders, may be called a trait of excessive propagandism and even persecution, but it is, from the Flemish point of view, reasonable and necessary. Personal relations and some degree of intelligent sympathy between upper and lower classes are, they argue, indispensable to the social well-being of a country. But such relations are impossible if these classes speak different languages. Now in Flanders the working-classes—perhaps 95 per cent.—speak nothing but Flemish; the upper classes are in general bilingual, but a large number still regard it as undignified to speak Flemish, which they consider a vulgar and impolite dialect. At home and in society they speak French as their families have done for centuries; they learn it in their schools and colleges and regard it as the hallmark of their social position. This attitude of mind is *Fransquillonisme.*

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[1] Maeterlinck's notorious article in the *Figaro* described the movement in the following terms: 'This party consists of a handful of agitators whose obscure bucolic origin and belated education has made them incapable of learning French. Ignorance, in natures naturally envious, has turned to rancour; and in their loathing for a language which, when they try to write or talk it, renders them ridiculous, they have patched up a kind of artificial or academic jargon out of scraps of their lower classes' heterogeneous dialects, as a vehicle for the expression of their mutual admiration; a pompous, grotesque, still-born production incomprehensible to the people upon whom it is foisted as their mother-tongue, and the butt of well-deserved sarcasm at the hands of really literary Flemings—for there are some—and Dutchmen.' And so on.

In all the Flemish towns, with the sole exception of Antwerp, society is still more or less *fransquillon.* Ghent and Bruges have in especial clung obstinately to the use of French. The result is said to be a serious impediment to all understanding between the classes. Social work among the poor is impossible as long as the rich consider it a disgrace to talk Flemish; masters and men speak different languages, to the detriment of the interests of both. In order to put a stop to these conditions the Flemish party wish to make it impossible to get a French education in the Flemish-speaking provinces, while demanding full liberty for education in Flemish in the French-speaking provinces.

It is desirable here to quote in full a statement of the *flamingant* demands as they were formulated shortly before the war.

> ‘The Flemish movement demands the full execution of the laws dealing with justice, administration and education, especially as regards the *arrondissement* of Brussels and the *cantons* of Enghien in Hainaut and Landen in Liége, where Flemish populations are subject to the Walloon régime.
>
> ‘Primary education to be compulsory; the teaching of the French language is not to appear in the curriculum.[1]

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[1] It must be noticed that this and the two following clauses, enforcing education in Flemish and restricting French to the status of a foreign language, apply only to the Flemish-speaking area (which, however, is to include Brussels) and are designed, as explained above, to exterminate *Fransquillonisme.*

'Middle schools (*moyennes*) and royal *Athénées* to be Flemingised, i. e. Flemish to be the language in which all teaching is carried on (*langue véhiculaire*); French to be compulsorily taught but only as a secondary subject, and the teaching to occupy one course only.

'Normal, primary and middle schools of agriculture and horticulture, industrial, commercial and maritime schools, the mercantile marine, the royal *conservatoires* and other musical schools of the Flemish districts are to be made essentially Flemish.

'Officers and medical officers of the army to be obliged to know and to speak regularly the language of the great majority of their men; the *gendarmerie* and the *douanes* on the Dutch frontier to be Flemingised.

'Diplomats, and consuls of Belgian nationality, to be obliged to know Flemish.

'Twenty-one *communes* wrongly described as Walloon, and therefore evading the Flemish legislation, to be transferred to the list of Flemish *communes*: viz., Brussels, Schaerbeek, St. Gilles, St. Josse-ten-Noode, Aubel, &c.

'The use of Flemish to be made regular in the civil and commercial courts of the Flemish districts, and in the supreme Court of Appeal at Brussels.

'The linguistic rights of the Flemings settled in the Walloon territory to be protected in the same manner as those of Walloons in Flemish territory.

'As to the spheres in which legislation is not proposed, the Flemish party will work unceasingly to Flemingise the free schools and colleges, commerce, agriculture, industry and fisheries. By improving the economic situation of the Flemish population they will attempt to check emigration.'

INTERNATIONAL RELATIONS OF THE MOVEMENT

Apart from the obvious and unchallenged anti-Gallicism of the Flemish Movement, its most important international relations are with Holland and Germany. In its inception the movement was certainly Orangist; it aimed at closer relations, possibly even at political union, with the Netherlands. Down to the present time the *flamingants* have encouraged close relations with the Dutch, and have shown the liveliest pleasure at such events as the Dutch participation in the exhibition at Brussels in 1910, and the subsequent visit of the King of the Belgians to the Queen of the Netherlands. These facts cannot be used as proofs of Orangism: they merely indicate a desire for friendly international relations with a country already connected by language, though such relations are hindered on the one hand by difference in religion and on the other by political prejudices on both sides which are the heritage of the years 1815–30. But other facts do indicate a certain degree of Orangism: the phrase 'Greater Netherlands' has come into use among a certain class of writers to indicate the political idea of a union between Holland and Flanders; some of the less temperate *flamingants* openly regret the period when Belgium was under Dutch rule, and the *Algemeen Nederlandsch Verbond*, a society whose seat is at Dordrecht, seems to some writers—possibly without justice—to propagate Orangist notions among the Flemish-speaking Belgians.

But the Orangism of the *flamingants* is faced by several serious obstacles. Holland is protestant, and Flanders is strongly and definitely catholic. But the acquisition of Flemish-speaking Belgium by Holland would, by uniting the Belgian catholics with those of Holland—who are fairly numerous throughout, and preponderate in the south—put the Dutch protestants in the minority in their own chamber. Again, such a union would bring the great ports of Antwerp and Rotterdam under one government, and the Dutch would probably not welcome such an arrangement. It seems to be generally felt in Dutch commercial circles that one such port is enough for a country of the size of Holland. In fact, the merchants of Rotterdam are jealous of Antwerp, and the feeling appears to be mutual. Some writers, again, lay great stress on a difference of temperament between Flemings and Dutch, the latter being, according to these authorities, of a Calvinistic grimness and seriousness in contrast with which the Flemings might almost be called mercurial.

In short, the Orangism of the modern *flamingants* is a matter of sentiment and international friendship. So far as it extends to practical politics, so far as it involves the proposal to unite Holland and Flanders, it is definitely opposed by the Dutch and disowned by the more responsible members of the Flemish Movement itself.

The question whether and how far *Flamingantisme* implies Pan-Germanism is a difficult question to decide on account of the wide differences of programme which the Flemish Movement includes, and even more on account of the violent feelings evoked on both sides whenever the question is raised. On the one hand may be taken the opinion of M. Charriaut (*La Belgique moderne, une terre d'expériences*, 1910), an acute French observer who writes with a decided bias against *Flamingantisme.* No good Belgian, he admits, would wish to be anything but a Belgian; but small nations, however tenaciously they cling to their own nationality, are necessarily drawn into the orbit of their larger neighbours. Neutral zones, he argues, are an illusion. A buffer-state must always incline to one or other of the great nations between which it is supposed to mediate. Now the Flemings are definitely and explicitly anti-French: it follows, therefore, by the above law that they must be (consciously or unconsciously) pro-German. 'So far as concerns Belgium, every loss to France is a gain to Germany.'

M. Charriaut clinches this argument by quoting statements of prominent *flamingants*, expressing their admiration of German achievements or more definite sentiments, e. g. that Flemings could acquire High German as easily as Rhinelanders and other *Plattdeutscher*, and that this would unite them with the civilization of the greatest European nation, even that Belgium ought to be regarded by Germany as her shield against France (a prominent *flamingant*, M. Pol de Mont, speaking at Dresden); and frequent allusions to 'our mother Germany', Germany as 'the great Fatherland', and so on. This language ought, perhaps, not to be pressed; but it does clearly prove that the Orangist orientation of the Flemish Movement in the thirties and forties has been replaced by a Pan-German orientation, and that closer relations with Germany were felt by many leaders of the movement to be desirable.

It is not intended here to gauge the extent to which Pan-German propaganda deliberately set out to capture the Flemish Movement before the war; but it is certain that attempts of this kind were made, e. g. in the movement for making the University of Ghent a purely Flemish university, which was zealously advertised by Pan-German organs in the first decade of the twentieth century.

Again, M. Charriaut points out, a great outcry was raised, when a French secondary school was founded at Brussels, by the *Vlaamsche Volksraad* society, on the ground that foreign influences and hybrid culture were at all costs to be resisted; but the German schools at Brussels and Liége caused no such tumult.

'The Flemish movement', concludes our author, 'is really nothing but a Pan-German movement in disguise. The culture which it has in mind when it seeks to defend the individuality of the race is altogether Teutonic in character. And this is logical, since the

Flemish race and the Flemish language are equally Teutonic.'

According to this writer, then, *Flamingantisme* was in 1910 a movement which, while it aimed at an independent Belgium, aimed also at placing Belgium on the German side in the already inevitable conflict between Germany and France, a movement which accepted with complacency the penetration of Belgium by German capital and influence, and was ready to play into the hands of those who saw in Antwerp the German-controlled port of the Rhineland.

M. Charriaut's views are violently opposed by members of the Flemish Movement itself. 'M. Charriaut', writes a prominent *flamingant*, 'knows much more than I do about the pro-German policy of the movement.' Another (M. Daumont) deals at length with M. Charriaut. There is, he says, a pro-German movement among the *flamingants* of Belgium. But the question is whether this movement originates with German propagandists, who have wrested *Flamingantisme* to their own advantage, or whether it depends upon the anxiety of Belgian *flamingants* to secure the help of Germany in furthering the interests of their party. He concludes that the former answer is the true one. The Pan-Germans have found in the Flemish Movement an effective means of propaganda, while the *flamingants* have seen in the German Empire only a centre of civilization, of scientific and literary energy, with which they were anxious to be on good terms. Germany was in the commercial sphere one of Belgium's best customers, and this made the task of the Pan-Germans much easier. At one time the Pan-German scheme involved the grafting of High German upon the Flemings; but this scheme was soon seen to be impracticable, and the Pan-Germans resolved to accept the Flemish Movement as it stood, and to use their influence to strengthen it. This *rapprochement* was successful. An official congress of *flamingants* passed in 1902 a resolution expressing a desire to unite the Flemish Movement with the literary movements of 'Germany, which has been called the land of Science and Art'. German suggestions hinting at the annexation of Flanders to Germany were, however, indignantly rejected by the party. Again and again the Flemish Movement has been accused of receiving subsidies from Germany; but the accusations have never been supported and have always been indignantly rejected.

The leading Flemings fully grant that they are anti-French in sentiment and policy. They consider the French language as 'contaminated by the moral corruption of Paris, the modern Babylon'; they desire to preserve—or rather to restore—Flemish speech and literature, Flemish manners and habits of thought, as typical of the country to which they belong. And all these are no doubt Teutonic, so that in a sense the *flamingants* are working for a Germanic ideal. But this must be distinguished from a Pan-German ideal. Pan-Germanism means the political union of all Teutonic peoples under the régime of the German Empire, and to that fate there never has been reason for believing that the Flemings would submit. Throughout her history, the keynote of Flanders has been her individualism and particularism; domination, whether it came from north or south, was equally offensive and intolerable. The battle of Courtrai was fought not for Teutonism against Gallicism, as the Pan-Germans affect to believe, but for a free Flanders.

German pamphleteers, describing the growth of the Flemish Movement, are compelled to admit that in 1914 the Flemings were no more friendly to Germany than the Walloons. The vexed question 'Is there a Belgian soul?' was at last answered in the affirmative.

The old quarrel was dropped, and Walloon and Fleming alike took up arms against the Germans. Nor has the course of the German occupation done anything to relax the first feeling of hostility. At the outbreak of war Germany counted on the Flemings, and they failed her. She now counts on them again, hoping by sedulous encouragement of the Flemish Movement to deepen the gulf between the two races and to force the Flemings into her arms. There is every reason to believe that this hope is as vain as the other.

It is, however, certain that a small party in Belgium would welcome the closest relations with Germany, even to the extent of inclusion in the German Empire. Members of this party are to be found among the Catholic Flemings, especially those belonging to the upper stratum of the population. They feel, apparently, a leaning towards Germany as an authoritarian state whose political outlook presents certain resemblances with that of the Roman Church. Such persons, however, even though in general friendly to the Flemish Movement, are not among its leaders. They rather represent that aristocratic element of the Flemish population which has often in the past entered into relations with foreign powers, while the bulk of the population preserves, as it always has preserved, its spirit of particularism and independence.

THE RELATION OF FLEMISH TO DUTCH

The question has often been raised, whether Flemish is truly a distinct language from Dutch. Certain Flemings like to maintain that the two languages are entirely different ; and in a criminal case at Ghent, in which a Dutchman was concerned, an interpreter was provided to translate Dutch into Flemish. In 1835 an agitation was raised in the press for ‘ substituting Flemish for Dutch ’ in the schools, and a pamphlet of

1845 declares it to be a well-ascertained fact that the two are separate languages, each with a grammar of its own. Even in 1910 a reporter in a Belgian paper described the Queen Wilhelmina as speaking to King Albert (on the occasion of his visit to Amsterdam) in Dutch, while the King replied in Flemish.

On the other hand, the literary convention of 1858 between Belgium and Holland provided that 'the reprinting of a Flemish book in Dutch or vice versa was a violation of copyright' (Article 3, § 2). The Brussels Académie Royale in 1851 awarded a prize to a Rotterdam poet 'as Flemish or Dutch poet. The limit' (so the award proceeds) 'which separates these two languages is in fact so vague that to determine it is the task of scholars only.' And since 1864, when the Belgian spelling was reformed, the most noticeable difference between the 'two languages'—that of orthography—has ceased to exist.

In point of fact certain words and phrases are peculiar either to the northern or southern idiom; but apart from this the two languages, in spite of local variations, are substantially identical. Flemish works are published at Amsterdam and Leyden; Dutch reviews and papers are to be found in most Belgian reading-rooms; Flemish actors perform at Amsterdam and the Hague, as do Dutch actors at Antwerp and Ghent. All Flemish anthologies include passages from Dutch authors. Flemings and Dutchmen contribute to each other's periodicals. At the literary congress which is held alternately in Belgium and Holland, no difficulty is found in the way of complete understanding, by the deputies from one nation, of speeches delivered by those of the other.

In general the fact seems to be that while there are certainly dialectical distinctions between various districts of Holland and Flanders (see below) which may, like the various dialects of English, render their respective users almost or quite unintelligible to each other when they are uneducated—as an uneducated Berkshire man and an uneducated Yorkshire man are unintelligible to one another—yet, on the other hand, the language as it is spoken by educated people differs very little; apparently no more than that of an educated Englishman from that of an educated Scot. Some writers express this relation by saying that just as Walloons speak (in addition to their own dialect) French, but bad French, so Flemings speak Dutch, but bad Dutch.

THE DIALECTS OF FLEMISH

The provisional Government of 1830 did not recognize the existence of Flemish as a language of literature and educated speech, but only (*a*) a group of related but strongly divergent local dialects, collectively known as Flemish, and (*b*) a literary and polite language related to them all, namely Dutch. The 'oppression' of Flemish by the revolutionary Government is largely explained by this fact. Coming in as it did on a wave of anti-Dutch feeling, it was bound to reject Dutch as the language of administration and society; and it was left with no alternative but to adopt French throughout or to lose itself in a labyrinth of mutually incomprehensible Flemish dialects.

It has been said above that polite Flemish and polite Dutch are substantially identical; but this language is more remote from the local *patois* of the average Fleming than from that of the average Dutchman. The dialects, as opposed to the polite language, have a far stronger hold in Flanders than in Holland. 'In Flanders', writes a Flemish man of letters in 1910, 'dialect is everywhere supreme, except in a few circles; Dutch [i. e. the polite language] is circumscribed by the walls of the school-house.' A Fleming travelling in Holland finds the people speaking the language—or something very like it—which he knows as literary Flemish; travelling in Flanders he only finds dialects, and these so different from his own that he and his interlocutor may be compelled to fall back on French.

Not only is there an individual dialect in each Flemish province of Belgium, but each considerable town has its own. These dialects have recently been made the object of a close study. Glossaries have been published for the dialects of Antwerp, East Flanders, West Flanders, South-East Flanders, Hageland, Limburg, &c. Many of them are extraordinarily rich and flexible. Thus the standard glossary of the Antwerp vernacular extends to 2,272 pp. and embraces over 13,000 words. It is, in consequence, hardly surprising that some, at least, are now asserting their independence against the levelling policy of the Flemish Movement. Thus a West-Flemish movement now exists, in frank opposition to the *flamingant* crusade; but it seems to have declined in strength, and in fact to be almost extinct.

The orthodox *flamingant* looks for a day when the dialects of Flemish shall have disappeared. Meanwhile he is willing to spend time and trouble in their study, in order that their vocabularies may be tapped for the enrichment of the polite language, much as the French of the Ile-de-France, in the hands of Ronsard and the Pléiade, borrowed words from the various dialects which as a literary language it was destined to supersede. One of the most moderate and reasonable supporters of the Flemish Movement (M. Daumont, *Le Mouvement flamand*, 1911) writes: 'It is a general law of racial history, a language is nothing but a victory over dialects. The regional dialects must give way to the Flemish language. They have their beauties and their value, which must not be ignored ; but of two evils, the lesser must be chosen, and the lesser evil is the weakening of regional idioms in favour of the Netherlandish tongue. . . . I feel bound to declare it : too little—practically nothing—is being done to smother the dialects. The *flamingant* students at Louvain speak them continuously. In provincial clubs, presidential address, discussion and conversation are all carried on in the dialect of the country.'

M. Daumont thus declares, at one and the same time, that the dialects must be stamped out, and that this is not being done. At Louvain they are perpetuated by the vicious custom which brings students into contact only with their own countrymen, while at Ghent, where men from all parts of the Flemish area mingle, polite language naturally tends to supersede the *patois*. But, as he further remarks, the country schoolmaster teaches in dialect ; the village priest preaches in dialect ; and the result is that the local idioms were never more strongly rooted.

Particularism has always been a leading characteristic of the Fleming. He is intensely hostile to anything which touches his local autonomy, which blurs his differentiation from his neighbours. It was, therefore, to be expected that the propagation of a uniform language and the implied war of extermination against local dialects should meet with very strong opposition from all the instincts of the people. This fact may be deplored by the militant *flamingant*, but it cannot be ignored, and he does not improve his position by describing dialects as the ' enemies of civilization ' and their retention as the result of ' intellectual sloth '. It is, in short, not to be expected that the Flemish dialects will disappear ; and in spite of the *flamingant* propaganda it may be doubted whether their disappearance is even desirable. The dialect of a district reflects and expresses the conditions of its individual life. It may be despised as barbarous by strangers, but that is no test of its value. Flemish was despised by the French, and yet it has an undoubted value and right to survive; and the same right attaches to the dialects into which it is divided.

CHAPTER VII

AGRICULTURE

PART I: IN BELGIUM

General

ONLY 30 per cent. of the population of Belgium is entirely or chiefly dependent upon agriculture.[1] The total income derived from agriculture is nevertheless a national asset of the highest importance, and amounts to 1,000 million francs yearly. Of this 70 per cent. is accounted for by the annual harvest, the remaining 30 per cent. by the yield of gardens, orchards, and cattle-breeding.

The arable land in Belgium amounts to about 7,900 square miles. Of this total about 2,950 are devoted to cereals. Wheat occupies about 620 square miles, and the average yield per acre is the highest in the world. The seed-corn is imported almost exclusively from Sweden, Germany, England, and France, but the Government experimental farms hope before long to produce a seed-corn peculiarly adapted to the soil and climate of the country, which will thus become independent of foreign supplies. The total wheat crop supplies about 22 per cent. of the demand for flour; the remaining 78 per cent. is imported. Rye occupies 1,020 square miles, chiefly in the poorer agricultural districts; it is mostly used for feeding cattle, and has to be considerably augmented by imports from Germany and elsewhere. Barley is principally grown in the maritime plain and alluvial districts generally. The yield does not nearly meet the requirements of the extensive brewing industry, and malt is imported to the extent of some 12,500 tons annually, besides about 300,000 tons of barley from Russia and the Danube basin. Oats are much grown in the Ardennes, and their cultivation is encouraged by a protective duty of 3 francs per 100 kilogrammes. The home production accordingly amounts to 85 per cent. of the consumption. The remainder is imported in the main from Russia. The demand for oats is large, owing to the development of horse-breeding.

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[1] For the numbers of the Belgian agricultural population see Chap. V, p. 249.

Of industrial crops Belgium grows 600 square miles of flax, 25 of rape, 150 of tobacco, 70 of hops, 230 of chicory, and 2,200 of sugar-beet. Most of these are grown by preference on loamy soils. Flax is also grown in the sandy part of Flanders, in the Condroz, and in a small part of the Ardennes. Rape is principally grown in Flanders and consumed locally by oil-mills. Tobacco is grown in Flanders, Hainaut, and the Semois valley of the Ardennes. It is supplemented by an annual import of 10,000 tons. Hops are grown in two districts round Alost and Poperinghe respectively, and chicory for the most part in Flanders and Hainaut; 50,000 tons of chicory are exported yearly. Sugar-beet is grown wherever there is a good heavy soil, with the help of natural and artificial manures freely used; and this crop forms the staple output of the larger peasant proprietors. The home produce, with 3,000 tons of imported roots, is treated in 92 sugar-factories up and down the country. Potatoes occupy 540 square miles, principally in the sandy districts, but also in the Ardennes. The import and export of potatoes are fairly equal; the export consists partly of new potatoes from near Malines, exported to Germany.

About half the total area of agricultural land is devoted to forage crops, hay, and pastures. The crops obtained do not, however, satisfy half the demand, and a million tons of forage of various kinds is annually imported to supplement the food-stuffs grown in the country.

Stock-breeding holds a very high place in Belgian agriculture. Its main branch is the breeding of horses, especially of the heavy Brabant cart-horse. This is an extremely powerful animal, at once heavily and compactly built. It reaches maturity at an early age, and is in addition long-lived, docile, and adaptable. Its original home seems to have been the Condroz, from which district two strains proceeded: the lighter and smaller horse of the Ardennes and the heavier Brabançon type. The former was almost exterminated in the early nineteenth century, owing to the Napoleonic wars and the subsequent poverty of the district which it inhabits. The Flemish horse, in contradistinction to the Brabançon, is a mixed breed, influenced by crossing with Frisian, Andalusian, and other stocks.

Horse-breeding is regulated by law and encouraged by a national system of shows and prizes, and by the efforts of a large society. Local societies also exist for the same objects. The national society, known as 'The Belgian Cart-horse', instituted in 1886 a stud-book, which contains by now a description of 32,600 stallions and 80,000 mares. The Belgian breed has been introduced with great success into the Rhine province, and the prices fetched by a good stallion or mare have increased tenfold since 1876.

Belgium is practically self-supporting in horses, except as concerns animals for slaughter, which are imported in large numbers from the United Kingdom. Other imports from the same source are army remounts and light riding or carriage horses. On the other hand, Belgium exports large numbers of cart-horses, two-thirds of which go to Germany.

There are seven distinct breeds of cattle in Belgium. The Polders breed is heavy, spotted red and white, and suitable for fattening. The red Flemish (or Cassel) breed is solid but less heavily built, and makes excellent milch-cows. It is adaptable, and succeeds well in the most diverse climatic conditions. The 'Belgian' breed is good for fattening, but less so for milking. The Condroz breed is rather like the last, but a better milker. The Campine cattle are small, and do not fatten well, but are good milkers; the Herve or Limbourg black-spotted breed is rather like the Campine, but more valuable. Finally, there is the small and unimportant Ardennes breed.

Cattle-breeding is much less important in Belgium than horse-breeding. Little interest is taken in pedigree and the purity or possible development of a stock; and though government officials have tried to educate public opinion on these questions, they have done so hitherto without success, and farmers are unwilling to make the immediate sacrifices necessary to secure ultimate improvements. This is largely due to the fact that stock-breeding in Belgium is less profitable than either horse-breeding or agriculture properly so called; the prices fetched by cereals increase out of proportion to those of fat cattle, and the price of fodder increases in proportion to that of cereals. Instead, therefore, of exporting cattle, as she does horses, Belgium is compelled to import them, as well as dairy produce, for her own consumption. Holland supplies great quantities of cattle, butter, and cheese, which are also imported from France and Switzerland. Margarine, on the other hand, is largely made in Belgium. Cattle are usually imported for slaughter; the import of slaughtered meat is small.

Pig-breeding, like cattle-breeding, is not a very flourishing industry in Belgium, though Flanders exports a certain quantity of pork to England. The imports of pork, bacon, lard, &c., are very considerable.

Poultry farming is an important and widespread industry. Eggs and chickens for the table are produced in very large quantities; in addition to the home consumption of the latter there is a considerable export, but eggs are imported to the extent of 80,000,000 a year.

Orchards occupy 250 square miles of the surface. Apples, pears, and cherries are chiefly grown in northern Liége province and southern Limbourg, a district which exports largely to Germany and England. East Flanders, Brabant, Antwerp, and Liége have great gooseberry and raspberry gardens, the produce of which goes mostly to England.

A special industry is the growing of grapes under glass. This is carried on chiefly round Brussels, where the villages are often completely surrounded by glass-houses. The grapes are produced all the year round, but the chief crop is at the end of the summer. There is a large export to England, Germany, Holland, United States of America, &c. Strawberries and tomatoes are grown under glass on a large scale in the Louvain and Malines districts. Certain *communes* near Brussels have specialized in chicory. In general, vegetables and fruit form a very important series of products. Their development, due partly to the increased purchasing power of the artisan classes, partly to the development of preserved vegetables and fruit, and partly to the growing demand in neighbouring countries, is for the most part in the hands of small-holders. Round Louvain, however, there are larger vegetable-farms, going up to 40 acres, of which sometimes

25 acres are planted with cauliflowers alone. In general the profit of fruit- and vegetable-growing is 3–4,000 francs per hectare (£50–70 per acre); in the best parts of Liége province it may rise to 10,000 francs (£170 per acre).

Flower gardens are concentrated round Ghent, where there are 700 of them. The export of flowers, plants, &c., is very considerable, and there is a large trade in cut flowers near most of the great towns, especially Antwerp and Brussels.

The Land

Belgium is a country of small proprietors. One in ten of the population owns land. Three-quarters of the landowners have less than 5 acres each, and 95 per cent. have less than 25 acres. Of 700,000 proprietors only 146 have more than 2,500 acres each; and on the average each proprietor owns 9·5 acres. Thus over a quarter of the land is owned by men each of whom has less than 25 acres, and nearly half by men each of whom has less than 100 acres.

The subdivision of properties is, however, much more minute than the above figures suggest, because most owners possess a large number of plots in different *communes*. Thus in a single typical *commune* of 1,739 acres the 801 proprietors own on average 2·16 acres each; four-fifths own less than an acre each, and only one over 62 acres. On average, therefore, each of these proprietors, besides owning 2 acres in this *commune*, owns over 7 acres in other *communes* in order to reach the national average of 9·5 acres. Estates in a ring-fence are thus very rare; in fact they are practically never found at all, except in the case of the most minute holdings.

There are no large landowners, in the British sense of the term, in Belgium. The two largest only possess

30,000 acres between them, whereas in the United Kingdom many hundreds own over 20,000 each, and several over 200,000 acres. In Belgium it is the ideal of every man to possess a plot of ground, possibly no more than a house and small garden, but preferably also a piece of agricultural land, however small. Again, one-tenth of the whole country seems to be jointly held by two or more owners; this is due to a partnership between heirs, among whom the estate must (with the exception of one share) be equally divided. This custom tends to check the excessive subdivision which such a law might be expected to cause.

One effect of the minute subdivision of land is to be seen in its high price. This is due partly to the competition for the purchase of small plots, partly to their intensive cultivation, which yields large rents, and, when practised by the tenant single-handed on a small plot, requires no margin for labourers' wages.

It is generally maintained that a country of small holdings must necessarily be a country of mortgages. Reliable information is fortunately at hand on this point, and shows that 31 per cent. of the owners have the whole or some part of their land mortgaged. Of the very small owners (those possessing less than ⅓ acre) only 7½ per cent. have mortgages. The proportion of mortgaged proprietors rises steadily till, in the case of proprietors of 37 to 62 acres, it is 40 per cent. It then drops again till proprietors of 247–370 acres are reached, after which the numbers are too small to serve as basis for generalization. The figures, however, show distinctly that the largest proportion of mortgages exists among holders of 7½ to 86½ acres; and with these the amounts vary from an average of £9 12*s.* 5*d.* per acre on farms from 37 to 62 acres each, to £21 10*s.* 7*d.* on those with from 7½ to 12½ acres. As the average price of agricultural land is about £60 an acre, the value of the mortgage, where it exists, averages less than one-sixth of the value of the farm. In the case of smaller properties the average mortgage represents a much higher fraction—one-third to five-sixths—of the value. This is explained by the higher comparative value of the buildings on a smaller plot.

It may therefore safely be asserted that Belgian land is not by any means severely burdened by mortgage. The average mortgage debt for the whole country is only £2 16*s.* 5*d.*, or, if mortgaged land alone is considered, £8 0*s.* 10*d.*, per acre; in either case a very small fraction of its average value of £60 per acre.

In all matters connected with the inheritance and transfer of land the liberty of the Belgian is severely curtailed by law. The testator is forbidden to disinherit certain persons,—his children, and in certain cases his parents,—who are known as *héritiers réservataires.* Thus, if there is only one child, the minimum which may be left to him is one-half the estate; if there are two, two-thirds of the estate, equally divided; and so on. The remaining portion of the estate is left at the disposition of the testator, who is, however, under no obligation to leave anything to his widow. Entail is specifically forbidden, and the portion of the estate left to *héritiers réservataires* must be left free of any charge upon it. Thus primogeniture is as far from being encouraged by the law of Belgium as it is alien to the sentiment of the people. The whole tendency of the Belgian system is to subdivide land among a large number of proprietors; that these proprietors tend to be members of the former owner's family is due in part to sentiment, in part to the law of intestacy, in part to the sliding-scale by which death duties are low in direct proportion to the closeness of the relationship between the deceased and the heir. Where no such relationship exists the death duties are extremely high.

The duty on sales of land is also extremely high, amounting to over thirteen times the English duty; and this acts as a severe check on the purchase of land. For very small properties the duty has in consequence now been reduced.

The proportion between owners, tenants, and labourers is an important factor in Belgian agriculture. Labourers form only one-third of the agricultural population; and of these a large percentage become in time small-holders. The agricultural labourer is therefore not, as in England, a numerous class presenting peculiar and important problems. On the other hand, though Belgium is a land of small-holders, two-thirds of its soil is farmed by tenants. A much smaller proportion of the land is cultivated by the owner than is the case in France, Germany, or Denmark. (The percentages of land cultivated by the owner are as follows: Denmark, 88; Germany, 86; France, 47; Great Britain, 12.) Tenant-farming prevails most strongly in the west, least in the Ardennes and Campine. In Neufchâteau and Arlon *arrondissements* the proportion of land farmed by the owners actually rises to over 75 per cent. In general, however, tenant-farming is the rule, and shows a tendency to increase.

This is not owing to any preference for the status of tenant-farmer. The Belgian tenant is not in a very enviable condition; his rent is high, and he gets no compensation whatever for improvements, unexhausted manure, &c.; and, though the average level of efficiency and prosperity is very little lower among tenants than among owners farming their own land, there is a strong sentiment in favour of ownership. The real reason for the prevalence of tenant-farming is the very high price of land, which makes it difficult for a tenant with a high rent to save enough to buy a plot. The high price of land thus renders the life of the tenant more difficult, while it does not benefit the owner except in the very rare event of his wishing to sell. On the whole, the rent of agricultural land in Belgium is 75 per cent. higher than in England; and the tenant cannot pay it without a certain degree of continual hardship, only made endurable by cheap and rapid means of transit, good agricultural education, co-operative societies of all kinds, and an excellent system of cheap insurance. Nor does it appear that the owner farming his own land is much more comfortably situated.

One serious disadvantage in the agricultural system of Belgium is the subdivision of almost every farm into a number—often fifty or more—of small plots scattered over many square miles of country. This is a natural result of the system of inheritance, and leads to a great waste of time and labour. In the Rhine province of Germany the same difficulty has been mitigated by the systematic redistribution of land.

Of the whole area of the country 8 per cent. is owned by the *communes*. This common land is almost exclusively situated in the Campine and Ardennes. In the early nineteenth century it was far more extensive, but enormous areas were sold or given away in the belief that it could only be profitably employed under private ownership. This theory was strongly advocated by the Government in the forties, and the result was that the *communes* parted with most of their land at one-sixth or one-eighth of its present value. It is now realized that this policy was a very grave mistake, and the alienation of common lands has been made so difficult as to be now practically unknown.

The land at present owned by the *communes* is usually poor in quality. Four-fifths of it are afforested; some is still used as common pasture-land; one-tenth is let out to the common-right holders for a term of years and by them cultivated.

The price and rent of land doubled between 1830 and 1880, after which it dropped 25–30 per cent. in 1895, owing to the opening up of the American cornfields. After 1895 it began to recover, as the methods of farming adapted themselves to the new conditions: co-operation, intensive cultivation, live stock and garden produce acquired new importance, and by 1908 prices and rents had risen again to nearly the figures of 1880. The following table gives the figures prevailing in 1908 for various regions:

	Pasture.		*Arable.*	
	Price.	*Rent.*	*Price.*	*Rent (per acre).*
Hesbaye	£78 10 0	£2 5 7	£77 18 0	£2 6 0
Flanders	65 13 0	1 17 6	70 0 0	2 0 6
Campine	49 11 0	1 10 5	41 18 0	1 2 5
Polders	95 11 0	2 16 8	63 5 0	2 4 4
Arlon region	41 4 0	1 7 10	31 18 0	1 4 11
Brabant	59 11 0	2 4 8	56 17 0	1 16 7
Ardennes	51 8 0	2 0 6	30 2 0	0 19 1
Condroz	51 13 0	1 15 0	34 1 0	1 0 9

The tendency to rise still continues. These high prices and rents, it must be clearly realized, are not due to the natural fertility of the soil. The soil of Flanders does not yield a single crop without one or two thorough and scientific manurings; there is no soil in Europe naturally more sterile than that of northern Belgium. The agricultural prosperity of Flanders is entirely the result of human labour; if this were remitted for a few years, Flanders would be a waste like the Campine. In the Hesbaye alone is to be found a soil of any considerable natural fertility. The high prices of land in Belgium are primarily due to the strong and continual demand for land among all but the very poorest classes, and secondly to the determination and skill with which the land is farmed.

In a country where all prices are very low, however, it requires to be explained how these high prices and rents—80 to 100 per cent. higher than those current in England—can be paid at all. Roughly speaking, the explanation consists in various efforts on the part of the Government to assist the farmer, and in efforts on the part of the farmers themselves to co-operate for common ends. We may note the extraordinary development of light railways all over the country, which supply universal and very cheap means of transport for produce; the high standard of agricultural education, which results in the judicious use of artificial manures and the careful selection of seeds, and the enormous development of the co-operative system, aided in part by the Government. Protective tariffs have been adopted only to a very limited extent. All cereals are imported free, with the exception of oats; potatoes and beet-root are also free; a few other vegetable products are taxed, but these do not form important items of Belgian agricultural produce. Cattle, sheep, and meat are dutiable, and this fact has raised prices and served to maintain the high price and rent of pasture-land. This question is further discussed in Chap. XI.

Finally, the competition of town life with that of the country is less severe in Belgium, where industrial wages are low and the condition of the artisan class bad, than in England. Consequently, even apart from the 'land-hunger' which seems to be an innate characteristic of the Belgian, there is no rival attraction to draw him away from an agricultural existence. The lowness of wages in the town thus raises rents in the country.

Woods and Forests

Of the total area of Belgium about 18 per cent. is afforested; this being over four times the percentage of Great Britain. The most densely wooded region is the Ardennes, which comprises nearly one third of the total woods of the country. Next comes the Campine; these two regions contain nearly half the Belgian forest area.

In 1905, 62 per cent. of the Belgian forests were owned by private persons, 31 per cent. by *communes*, 5¾ per cent. by the State, and 1¼ by other public bodies.

During the ten or twelve years preceding 1908 the Belgian State-owned forests increased by 25 per cent. This policy of increasing the State ownership of forests dates from about 1870, when it was found that the privately-owned forests were being wastefully and recklessly exploited and were rapidly returning to waste. The view was accordingly adopted that national capital must be used in planting so as to facilitate a far-sighted and consistent policy. At the same time the State Forestry Department carries on a great amount of educational work both as to the necessity and the methods of planting. This work has met with much opposition, especially from large farmers who used the common lands for grazing; but these objections are by now being steadily overcome.

The Department of Woods and Forests is under the control of the Minister of Agriculture, who recognizes eleven inspectoral districts, each controlled by an inspector promoted from the ranks of the forestry experts. These are trained by a course of four years at Gembloux or Louvain, and in addition courses of public winter lectures are given in the various districts. Beside these courses, a large number of lectures are arranged for gamekeepers, farmers, &c., in courses of three, including practical demonstrations. For the latter purpose the State has acquired considerable areas of land for demonstration grounds, State nurseries, &c.

The State also pays as a rule half the cost of all planting undertaken by a *commune*, and looks after the plantation free of charge for the first ten years, during which it is free from taxation. Advice is given to *communes* or private persons as to the selection and treatment of trees.

Formerly the forests of Belgium consisted mostly of beech and oak, and other slow-growing trees. These are still in the majority, but the newer plantations consist mostly of conifers, especially in the poor soils of the Ardennes and Campine.

Experience has now shown that the State can count on the equivalent of 4½ to 5½ per cent. interest on the capital expended in forestry work, so that the State Department of Forestry, in spite of the amount of gratuitous help it gives to *communes* and private individuals, is a profitable concern. Moreover, a large home-grown timber-supply is thus assured, and a useful occupation is provided for the agricultural population which, while not requiring a high degree of skill, relieves them from unemployment during the winter months.

Agricultural Survey of Belgium

In the present section an account will be given of the agricultural conditions prevalent over each natural region contained in Belgium. For the definition and physical characteristics of the various regions reference should be made to Chap. I.

The Maritime Plain.—The mile-broad belt of dunes which borders the maritime plain to seaward has very little agricultural value. The ranges of dunes are separated by hollows known as *pannes*, grown with coarse grass and watered by springs. Small patches of pasture-land thus arise, which are grazed by sheep—where they are appropriate for cultivation they are used by the fishermen and villagers of the coast for growing a few cereals and vegetables.

Inland the maritime plain takes the form of *polders* lying at about the sea-level, elaborately drained by canals, and preserved from flooding by dykes. The canals serve not only to draw off the superfluous water, but to keep the surface layer of water fresh. The sand which underlies the peaty and clayey soil being permanently waterlogged by sea water, it is necessary to keep down the level of the salt water by means of an artificially-maintained stratum of fresh; otherwise the *polders* would revert to salt marshes. The canals of the maritime plain thus maintain a 'hydrostatic equilibrium', whose perfection is essential to the pursuit of agriculture in the *polders*.

The soil is deep and loamy, heavy to work, and rich in organic matter. Manure is for the most part consequently not used, as the soil is already sufficiently rich; but it is so heavy that powerful teams are necessary for ploughing. Farms tend to be large, going up to 150 acres, and the houses are scattered over the country each in the centre of its own land, isolated from its neighbours, and often surrounded by a moat. Most crops may be profitably grown in the *polders*: cereals, especially barley, and beet are the favourites, but pulse, flax, and other crops are common. Pastures are commonest in the district of Furnes and about the Franco-Flemish frontier. Cattle are bred in this district, derived from a cross between the Durham and red Flemish strains; cart-horses are also bred. Eastward from this region, along the Belgian coast, the *polders* are comparatively thinly inhabited and a good deal of land is devoted to grazing; westward, in France, the population is thicker and there is more arable. The Moëres, the two lowest depressions in the maritime plain, which lie just on the frontier and were finally drained only in 1828, now form rich agricultural land, scattered with prosperous farms. The smaller of the two is predominantly peaty and best adapted for grazing.

Flanders.—Taking French and Belgian Flanders together and regarding it as reaching from St. Omer to Antwerp, we may distinguish within it two regions—the clay of the west and the sand of the east. The clay plain of Flanders includes French Flanders and the Belgian districts round Ypres and Roulers; the sandy plain includes the Waes and Maggesland from Bruges to Antwerp.

The clay district is agriculturally much superior to the sand. Even here, however, great skill and care are necessary in order to produce good results. There are few trees, as these would shade the crops; every available piece of ground is occupied by cereals, especially wheat, industrial plants such as colza, flax, hops and beet, and vegetables. Stock-breeding is also important, and forms one of the principal resources of the country. There are many cattle, but very few sheep. The farms are scattered singly over the country, generally lying in hollows and often surrounded by moats; the nineteenth century saw a certain tendency towards the development of villages, but the isolated farmhouse is still usual.

An important local branch of agriculture is the cultivation of hops on the low hills round Poperinghe and Bailleul, which offer a suitable soil and protect the plants from the north winds. The only other regions in France where these plants are grown on any scale are the Cambrésis and the Côte-d'Or.

A line roughly passing through Deynze on the Lys, Thielt, and Thourout, divides the clayey Flanders of the south-west from the sandy Flanders of the north-east. Here, in the Maggesland and the Waes, the houses are grouped in villages which line the main roads, and never stand far out in the fields as in south-western Flanders; the population is high, but concentrated in these large villages, which are separated by broad expanses of cultivated land. The farms are very small and the soil by nature very poor; but it yields large and frequent crops, one-third to one-half yielding two crops a year. This is due to the care and diligence with which it is cultivated, and especially to the lavish and scientific use of manure. Almost all the work is done by the spade, as it cannot be done thoroughly enough by the plough. The main crops are wheat, rye, barley, potatoes, flax, hemp, colza, fodder plants, and beet, but many others are grown in small quantities; the cultivation is, with the exception of the market-gardens round Paris, the most intensive in Europe, and rotation of crops has been brought to an enormous pitch of perfection. Stock-breeding is practically unknown, but rabbits are bred on a large scale and sent to the industrial districts of Belgium, to France, and to England.

This sandy part of Flanders is much grown with trees. Orchards are seen everywhere; the roads are lined with trees and the ditches with hedges, which serve to bind the sandy soil together and to evaporate part of its superfluous moisture. In the Maggesland there are many woods and coppices, consisting of pines, oaks, and beeches. The north of this region is the most barren part. Here farms become rarer and pinewoods more common; there is a good deal of uncultivated land, and even small dunes.

Brabant.—The sandy plateau of Brabant, inclining in the north-west to Flemish clay country and in the south-east to the loamy Hesbaye, is comparatively barren in the centre, where the sand is poorest, and is here largely given up to forests; but its marginal zones are fairly fertile. Thus between the Dendre and the Senne the sand is covered with 15–20 ft. of loam, which gives a good agricultural soil; east of the Senne this loam disappears, and the sand comes to the surface; farther east again the Hesbaye begins on the south, and the sandy plain of the Hageland in the north, which was very barren and almost entirely waste land till the introduction of chemical manures.

Brabant contains, therefore, considerable areas of fairly good land. Crops of many different kinds are grown, especially beet, flax, hops, and chicory, and there is much stock-breeding.

Hesbaye.—The transition from Brabant to the Hesbaye is very gradual, and the conditions described below as prevailing in the latter district are also found to a considerable extent in the former. The soil is heavy and loamy, and requires strong teams; the farms tend to be large, often up to 250 or 500 acres, though small farms are also common. The character of the soil favours stock-raising and the cultivation of cereals on a large scale. It is especially suited to sugar-beet, which is grown regularly every other year without any perceptible deterioration of the crop. It is a crop which requires a good deal of capital, both for the beet itself and for the purchase of animals to eat the *vinasses* or refuse pulp, which is returned to the farmers from the distilleries. The introduction of beet has greatly increased the prosperity and agricultural importance of this region.

Northern Hainaut.—This district is closely related to the Hesbaye. It is composed of carboniferous rocks covered with loam, and contains for the most part fairly large farms growing beet and cereals and breeding stock. The beet-leaves are used in the autumn for fattening sheep.

Campine.—This great sandy plain, everywhere very wet, and composed, in its lower-lying parts, of marshes and peat-bogs, is the poorest part of Belgium. The population is low and poverty-stricken; agriculture is everywhere at a low ebb. In fact, the Campine is what northern Flanders would be without the immense expenditure of skill, time, and money which has fertilized the Flemish plain. But conditions are improving; dairy-farming is already practised to some extent and with some success, and potatoes, oats, and rye are grown. With the more systematic adoption of chemical manures the Campine will certainly in time become at least a tolerable agricultural district. The development of the coalfield is sure to affect agriculture.

The farms are small, mostly between 5 and 15 acres; a farm of 40 or 60 acres being regarded as large. There is much common land, a great proportion of which is now afforested.

Herve.—The Herve plateau is the home of Belgian stock-breeding. Its clayey soil, its comparatively high elevation—up to over 1,000 ft.—and its moist climate make it an excellent grass-country, and it is almost exclusively devoted to grazing.

Farms are small, not as a rule over 25–45 acres, and maintain up to 15 or 20 cows. In summer the cows are kept in the fields; in winter they are fed on hay, oil-cake, linseed, or cottonseed, &c. They are chiefly valued as milkers, and the dairy is the most important part of the Herve farm. Butter and cheese are the chief produce and are sold in large quantities. These, like milk, are mostly sold through co-operative societies. Horses are not much used, but a farmer who possesses one uses it for taking his own and his neighbours' produce to the town, as well as hiring it out when required.

The horse has never been adopted for any kind of draught-work.

Pig-keeping is highly developed; every farm fattens pigs on its buttermilk, and they form an important source of income, being exported annually by thousands to Germany. They are not much bred, being chiefly imported for fattening from Limbourg province. Poultry are also extensively kept.

Herve contains many orchards, chiefly consisting of apple-trees; the apples are boiled down for syrup, which is exported in large quantities. The apple-harvest is a regular festival. The fruit is also made into cider at Thiminster and exported for the same purpose in great quantities to Germany; the best fruit is exported to Germany and England for eating.

The peasants of Herve are prosperous and comfortable people, leading an easier life than most Belgian agriculturists. This is especially true of the men, since the dairy work is all done by the women; the men confine themselves to hedging and haymaking, taking produce to market, &c.

Condroz.—This is a district of large farms, going up to 250 acres and more, though there are, of course, many small plots of 2 to 7 acres cultivated by peasants, and a great number of still smaller plots cultivated in their leisure time by industrial workmen. The chief crops are rye, wheat, spelt, oats, and (above all) winter barley, as well as potatoes and various roots to serve as food for the cattle. Every farm of any size has extensive pastures, and these have increased in the last twenty years at the expense of arable, since in this region, where the soil is not rich, stock-raising pays better than agriculture. Horse-breeding takes a prominent place, and a very good breed of Brabant horse is produced. Cattle are more extensively bred in the Condroz than anywhere else in Belgium. Every farmer, large or small, buys calves and fattens them, a distinctive breed of cattle being characteristic of this district. The peasant population is possessed of great agricultural ability and is well educated, and in consequence the average level of agriculture is high. The soil is clayey, being produced by the decomposition of carboniferous and Devonian rocks, and chiefly needs phosphates, whose use has been attended by remarkable improvements.

Famenne.—Here the conditions are hardly to be distinguished from those of the Condroz. On the whole there is more arable, especially barley and rye fields, and rather less live stock; otherwise the above description applies to this region also.

Ardennes.—The high plateaux of the central Ardennes have for the most part an impermeable clay soil which gives rise to numerous marshes (the ‘Hautes Fagnes’) and supports extensive forests, the latter covering two-fifths of the area and in most cases belonging to the *communes*, which possess in them an important source of income. Besides these forests there is much waste land. Twenty years ago sheep-farming was the principal occupation of the peasant, and tillage only existed near the villages; in many districts land was burnt off and ploughed once in ten or fifteen years and then left to lie fallow. The introduction of chemical manures has, however, already created enormous changes and vastly increased the extent of land at any given moment under crops. The chief crops are rye, oats, potatoes, and fodder. Tobacco is also grown in the neighbourhood of the Semois.

Stock-farming has correspondingly increased, but systematic breeding is, as yet, unknown. Co-operative societies have almost everywhere taken over the preparation and distribution of dairy produce, and pigs are extensively kept, the hams and sausages of the Ardennes being known throughout Belgium. The Ardennes horses, which are small and hardy, are also well known and highly valued.

The size of the farms is variable; those between 7 and 75 acres are considered small, those over 150 acres large. There are many small proprietors, and it is the rule for a man to farm his own land, tenant-farming being comparatively rare in this district.

On the whole, in spite of the poverty of the district, the people of the Ardennes are well-to-do. Wages are high, and rents have not yet risen to the point which they have attained in the rest of Belgium. Moreover, the population is intelligent and well-educated, and is famous for providing recruits to the civil services.

The Arlon belt.—This southernmost belt of Belgium, sometimes called Belgian Lorraine, has a clayey soil, sandy in parts, and in parts containing a chalky loam. The hill-tops are wooded, the valley-bottoms used as pasture and the hill-sides cultivated. Small farms are the rule, and methods are primitive; the old-fashioned triennial rotation is still almost universal. The climate is milder than in the Ardennes and the produce more varied; the population is comparatively prosperous, though hardly wealthy. Dairy-farming is much practised, most of the peasants keeping cattle and making butter.

PART II: IN FRANCE

For those portions of France which are included in our area it will be enough to give a brief survey of the agricultural conditions prevailing in each natural region in turn. It is not possible to make general statements applying to all these regions, owing to their diversity.

The chalk region.—The *Boulonnais* forms a Jurassic island in the chalk-down region which extends from

Cap Gris-nez to the head-waters of the Sambre. Its physical and geological character give it an individuality of its own as an agricultural district. The Jurassic subsoil gives it a clayey soil, more suited to pasture-land than to arable; and in consequence the Boulonnais, near Cap Gris-nez especially, is a pastoral country, hilly and picturesque, containing many apple-orchards. It is famous for its horses, the Boulonnais breed being a very powerful type of cart-horse much in demand throughout the neighbouring districts for heavy agricultural work. Fairs at which these horses are sold exist in all the Boulonnais villages, as well as farther east and south at St. Omer, Thérouanne, Lillers, Béthune, St. Pol, Hesdin, Montreuil, and even as far afield as Arras and Bapaume. Roughly the whole region between the Belgian frontier and the Somme uses these animals, of which there are some 80,000 in the Pas-de-Calais alone, not counting those exported for artillery and omnibus horses, quarry work, &c.

The *Artois* and *Cambrésis* may be taken together as typical of the true chalk-down country. Here the bulk of the area is loam overlying chalk and producing a fertile soil, well suited to cereals, hops and beet. Consequently in spite of the great dearth of water the district is agriculturally among the richest in France. Wheat, barley, and oats are grown in large farms, and yield excellent harvests. For some years past beet has been steadily gaining ground at the expense of other crops, and seems likely to occupy in time the great majority of the land, which is already studded with sugar-factories and distilleries. Chicory and oil-yielding plants, especially colza, are also grown. The Cambrésis was once a great flax country, but this crop has now much less importance than formerly.

On the higher parts of the plain a stratum of tertiary sand or clay is sometimes, especially in the Cambrésis, found between the surface-soil and the chalk. Such patches are of comparatively little value; the clays are indeed good for nothing but to grow wood and to feed small springs round which the houses tend to concentrate. The houses rarely stand singly; they are grouped in compact villages scattered over the country at fairly regular intervals, either at these springs of the tertiary clay or on the bank of a torrent. Each village contains a large population—up to 2,000 and over—employed on their little plots of land during the summer and in home industries during the winter. Those who have no land migrate for the summer to the neighbouring plains and hire themselves out as labourers; some travel for this purpose as far as Brie or Beauce.

The deeper river-valleys are well watered by springs and frequently flooded by the rivers when in wet weather the torrents of the plateau are in spate. On these occasions the fields by the river are covered with a deposit of mud which fertilizes them and makes them valuable for growing cereals and beet.

This country is, on the whole, a district of large farms; but small plots are not unknown, and are devoted to the same crops as the large farms.

The natural centres of the chalk plateau are Arras and Cambrai; here are especially concentrated the sugar-works of which the district is full, and from these points its produce is dispatched in all directions.

The *Mélantois,* or low chalk plateau lying immediately south of Lille, resembles the above-mentioned district geologically and agriculturally if not physically. It is remarkably fertile and consists chiefly of large farms; though the density of the population—since the district lies between the black countries of Lille to the north-east and Lens to the south-west, and these towns are only 17 miles apart—is somewhat prejudicial to successful farming. The crops, as in Artois and the Cambrésis, consist mainly of beet and cereals.

The valley of the Deule, where it flows through the Mélantois, forms an agricultural district with characteristics of its own, resembling the river-valleys of the down country. The soil is partly peaty and partly clayey; the springs which once made it marshy are now tapped to supply Lille with water, and the valley is well drained. The peaty soil is mostly devoted to beet and chicory, and the clayey to cereals (wheat and oats); very few other crops are grown at all. Both types of soil are intensively cultivated and require a good deal of artificial manures, among which the waste *vinasses* of a large local distillery, pumped into the fields through pipes, is one of the most satisfactory. After one such manuring tobacco, chicory, beet-root, and wheat are grown in rotation for four years, and then *vinasses* are again applied. Distilleries and sugar-factories are common in the valley, as in the valleys of the down country; they consume beet from the Cambrésis and Flanders, as well as local produce. Cattle are also bred, being fed almost entirely on waste pulp from the sugar-works. A large dairying industry has thus arisen, milk and butter being supplied to Lille, Carvin, and other towns of the neighbourhood. The district has, in fact, become a centre of trade in dairy produce. Butter is imported from Holland, Normandy, Siberia, Denmark, and Australia to the Deule valley, and thence sold to Lille and the other towns by large speculative dealers; and a similar trade exists in margarine (largely made at Béthune) and eggs. The centre of this dairy-produce trade is Sainghin, whose immense prosperity is chiefly due to it.

Small properties are common in the Deule valley: at Sainghin, and in several other places, more than three-quarters of the families own a plot of land.

Properties of 200 acres are exceptional; those of 60 to 100 are reckoned as large farms; and four-fifths of the proprietors own about an acre or less. In several parishes the institution of *portions ménagères* still exists. These plots belong to the *commune*, but are given to married couples in usufruct, to revert to the *commune* when both husband and wife are dead. Most farmers own some land, but very few own all they farm; a largish farmer may own 15 to 25 acres and rent 45 to 70 more. A farm of 25 to 30 acres is generally worked by the farmer and his family, with 2 horses and without the help of labourers.

South Hainaut (see Chap. I) has a mixed subsoil, but may, on the whole, be regarded as a chalk district. The south-west is a transition to the Cambrésis; here the chalky character is most explicit, and the country is mostly under wheat. The south-east, towards the Sambre, is occupied by the great forest of Mormal, 30 square miles in extent. The north, towards the Belgian frontier, is for the most part a grazing and stock-breeding country.

The Plains.—The maritime plain from Calais to the Belgian frontier, and the Flemish regions round St. Omer and Hazebrouck, have been considered in a former section as part of the Belgian maritime and Flemish plains (see pp. 315–18); of the districts round Lille, we have above described the Mélantois. The *Weppes*, or valley of the Lys and lower Deule round Armentières, is a country of rich meadow-land with much live stock and a large population living in villages strung out along all the main roads. The *Ferrain*, round Roubaix and Tourcoing, is a fairly good agricultural district whose clayey and sandy soil grows wheat, as well as a certain quantity of oats, beet, potatoes, and flax. There is some pasture-land, and a fair number of cattle, horses, and sheep are kept; the animals are mostly fed on hay and refuse pulp from the distilleries. The land is much subdivided and largely owned by manufacturers in Lille, Roubaix, and Tourcoing and farmed by tenants.

The *Pévèle* has a clayey soil much resembling that of Flanders; it is well adapted to grazing, but is little used for that purpose, being mostly arable and devoted to cereals and industrial plants. An important development of agriculture in the Pévèle is the growth of beet for seed, the trade in which, for the whole of France, centres round Orchies. This enterprise was begun in the seventies at Cappelle, and beet-seed of the best quality is now produced to suit every kind of soil and for every purpose. The beet-pulp is extensively used for feeding cattle, which are in consequence numerous and profitable in spite of the absence of pastures.

The *Gohelle* and the *Ostrevant* are primarily to-day not agricultural districts at all, but black countries dotted with collieries and factories, whose whole energy is devoted to industry. The loamy portion of Ostrevant is fertile, and contains large farms, chiefly devoted to cereals and beet, on the higher ground and small farms in the valleys; where (as between Arleux and Bouchain, and between Somain and Valenciennes) this loam is absent, the harvest is very poor. The sandy hills of the west are agriculturally worthless and grow nothing but bents. In the east of Ostrevant are considerable forests.

The Ardennes region.—The surface of the high Ardennes plateau has already been described under Belgium. The French portion has the same character: it is thickly wooded, and its soil, which is poor and clayey, becomes peaty in the hollows. It is thinly scattered with little villages, each in its own clearing; and there is very little agriculture of any kind. The gorge of the Meuse is too narrow and abrupt to encourage agricultural development. Fields of oats or rye are occasionally seen in the clearings of the forest; otherwise there is little but timber and, in the valley, industry.

The *Thiérache* is distinguished by its clay soil and undulating character, which make it an excellent country for pastures and orchards. It is rich in timber and contains several forests; its agricultural value in the strict sense of the word is low. The soil is too wet for cereals; but beet grows fairly well wherever chalk appears near the surface. With this exception agriculture has given place to stock-farming.

The pastures of the Nouvion *canton* support cattle from Normandy, Brittany, and the Morvan, which they sell to the large towns of the north. The Picardy breed, a cross between the Norman and Flemish, is kept for dairy-farming, which is practised on a large scale at Buironfosse, Eglancourt, Chigny, Crupilly, Lavagueresse, Esquehéries, &c. Butter is exported in every direction from Nouvion, and Maroilles cheese goes to England and elsewhere.

The vine is still cultivated farther south in the Porcien and Laonnais, but in the Thiérache it has been replaced by apples grown for cider, of which the annual produce is valued at about a million francs. Cider is thus one of the leading industries of the Thiérache.

Properties are extremely small; thus at Marfontaine (*canton* of Sains) 985 acres are divided into 1,352 lots held by 212 proprietors. The general level of prosperity, however, depending partly on stock-farming and partly on industries, is fairly high; and thatched timber and clay cottages are gradually giving way to well-built houses of stone or brick.

The development of stock-farming has led to a decrease of the population, which is scattered in small villages and hamlets hidden among gardens and orchards and traversed by streams. The Thiérache supplies a large number of agricultural labourers to the Ile-de-France, whither they migrate in the spring and return in the course of the autumn. Their good physique makes them valuable casual labourers, and the resources of their own country are too scanty to support them without this supplement.

The strip of country between the Aisne valley and the Ardennes which prolongs the Thiérache south-eastward resembles it in its clayey character and its agricultural poverty. The oolitic hills and plains between Rethel and Mézières have some rye-fields; otherwise the country consists largely of woods, orchards, and pastures, with water-meadows down in the Meuse valley where that river flows over the clayey plain extending upstream from Mézières past Sedan to Dun. Down towards the Aisne the soil becomes better and agriculture more prosperous.

Lorraine.—The upper *Meuse valley*, above Dun, consists entirely of agricultural land, fertilized or devastated by the river according to its caprices. The most important agricultural product and export consists of forage for animals. In order to improve agricultural conditions considerable works are necessary in order to suppress the summer floods while utilizing those of the winter season for fertilizing the land; to prevent the river from altering its course and eating away the fields; to drain the fields; and to reclaim portions of the shallows and bed of the river for agricultural purposes. In the meantime both drought and flood are liable to cause complete failure of crops over large areas. These dangers are largely responsible for emigration and growing depopulation.

The *Côtes de Meuse* form an extremely poor agricultural district. Corn is grown here and there on the slopes, but the only crop of any importance is sainfoin, which yields a good return even on the stoniest soils. But the country cannot support a large agricultural population, and its forests are its most valuable asset.

The *Woëvre* is not good agricultural land. In winter the whole surface of the plateau becomes water-logged and great portions of it disappear under the swamps. In summer it bakes hard and cracks, so that agriculture is extremely laborious, and four or five horses are necessary to draw the heavy plough of the country.

The necessary agricultural improvements consist first in the use of lime as a fertilizer to counteract the clayey nature of the soil, and secondly in systematic drainage. Material for both these operations can be cheaply procured on the spot; limestone is everywhere to be found, and the Oxford clay, which makes good tiles, is equally serviceable for drain-pipes. The difficulty in the way of both improvements consists in the multiplication of small properties and the consequent shortage of capital in the hands of the individual proprietor. The formation of associations or syndicates seems to be undertaken with great reluctance.

Agricultural methods are still somewhat primitive; a three-year rotation of crops, including one year fallow, is universal. It is said that the practice of leaving land fallow is suited to the heavy soils of the Woëvre, but a five- or seven-year rotation would undoubtedly produce better results. The chief crop is wheat; no other crop is nearly so much cultivated. Potatoes, beet-root, and industrial plants are grown on a small scale. The pastures occupy narrow strips of land along the banks of streams; forage, with the exception of clover, is hardly grown at all. Lucerne will not grow.

There is very little live stock, as would be expected from the restricted area of the pastures. Horses for farm-work are the only animals found in any numbers, with the exception of pigs, which are kept everywhere. The land is ill adapted to cattle and unhealthy for sheep.

There is little timber on the Woëvre, and what there is grows only on the outcrops of pure clay where there is no arable surface-soil. The timber industry which is carried on in a few villages derives its material mostly from the forests of neighbouring areas.

The vine, which is cultivated on the limestone hills of the surrounding districts, is found also on the plain. The wine which it here supplies is abundant, but acid and of inferior quality. This could, like other crops, be improved by drainage; the roots of the vine suffer from an excess of moisture in the subsoil. On the lower slopes of the heights of the Meuse the soil is more suitable to the vine, but the climate is said to be too cold to admit of good results. The limestone hills which are scattered over the plain are rather more favourable; their slopes are protected from hail, and frost is the only serious enemy. In the southern Woëvre the vine is a good deal grown, but the work is all done with the hoe and is very laborious. Wine is the only article of export from the northern Woëvre, where it is exchanged for corn from the Barrois and Argonne.

On the *Briey plateau* iron-mining has everywhere taken precedence of agriculture, which, however, profits by the large and cheap supply of phosphates (in the form of basic slag) for manure.

In the entire district about 74 per cent. of the whole cultivable land is devoted to cereals: wheat occupies 47 per cent. These figures do not include the smallest holdings. The southern part of the district (Jarnisy) is the most agricultural in character, and yields the best results. At Chambley wheat yields 22 bushels per acre, oats 33; at Charency-Vezin on the Chiers wheat yields 14, oats 27. In the immediate neighbourhood of Conflans, and in general on the borders of the Woëvre, the yield is inferior to that of the Hussigny, Briey, and Avril districts. The high yield of the Jarnisy seems to be due to the fact that its somewhat heavy and clayey soil is not claimed by the iron industry and can be farmed on the large scale which the soil demands. In the *canton* of Conflans more than half the total area is divided among farms of over 50 acres. These farms, which are large in comparison with the average of Lorraine and include several of over 250 acres, are old seigneurial estates and are mostly at a distance from the villages. In general, however, the clay soils are less fertile than the limestones of the eastern part of the plateau.

As in the Woëvre, pasture-land is found chiefly along the banks of the streams, where it is fertilized by the mud brought down by winter spates. These natural pastures occupy about 7 to 8 per cent. of the land; artificial pastures, which are spreading in the limestone district around Longuyon and Longwy, occupied in 1893 10 per cent.

Industrial crops could no doubt be grown, but at present, owing to the absence of factories, there is no local demand. Beet-root was grown, and a sugar-factory established, at Jarny some time ago, but did not meet with success.

In the mining district agriculture is declining, owing to the superior attraction of the ironworks. Even here, however, agriculture is by no means unsuccessful, largely owing to the steady demand for food-stuffs among the industrial population.

The Briey plateau is wooded wherever the soil is too thin or poor for agriculture. Timber grows especially on the steeper slopes, the levels above and below being cultivated. A good deal of deforestation has taken place in the past to satisfy the demands of the ironworks; at present this is no longer going on; the woods are preserved and their exploitation is properly controlled.

The *Moselle valley* in the neighbourhood of Metz and Thionville belongs to Germany, but is treated here for the sake of geographical convenience.

The Moselle valley itself is a strip of sands, gravels, conglomerates, and other alluvial deposits traversing the liassic district of Lorraine from south to north. These alluvions are as a rule covered by a deposit of yellow or brown mud, coloured by iron-ore and resembling the red soil of the Haie. It forms a light gravelly soil, sometimes as much as 6 ft. thick, absorbing water and producing springs where it is superimposed on beds of clay.

This lias district is the richest part of Lorraine from an agricultural point of view. Metz and Nancy are important agricultural centres and their neighbourhood contains numbers of large farms, châteaux, and country houses. The yield of grain is high, 16–22 bushels per acre for wheat and more for oats.

Pasturage and hay exists along the streams, and is fertilized by the mud deposited in their winter spates; it is sometimes damaged by the same agency. It is rich enough to support a good deal of live stock.

Owing to the richness of the land woods are rare. They grow only on clayey patches of soil too heavy for agriculture.

The plain is mostly under cereals; the hill-sides support vineyards. The whole of the Moselle valley grows wine on both banks; it is of a somewhat acid flavour, and is produced at the average rate of about 440 gallons per acre.

This wine is locally consumed or exported to the Vosges. Grapes are largely sent to Germany for the manufacture of imitation champagne. The prosperity of the vineyards has at times been somewhat impaired by disease of the vine and scarcity of labour.

PART III: IN LUXEMBURG

Luxemburg falls physically into two main divisions. The northern half belongs to the high plateau of the Ardennes–Eifel massif, or rather to that district of it which is known as the Ösling. This part is bleak and barren. The southern (the so-called Gutland) belongs to the Trias-Jurassic region, which, in the case of Belgium, we have called the 'Arlon belt'; here the soil, though not rich, is better and the climate more mild.

Of a total area of 998·3 square miles, the Grand Duchy devotes 597·5 to agriculture. This, with all the following figures, applies to 1913. The total agricultural area shows a fairly steady though small increase for several years past. Of this cultivated area the proportions grown with various crops are as follows:

Cereals . .	45	per cent., slightly increasing.
Pulse . .	1·6	per cent., declining.
Roots . .	14	per cent., slightly increasing.
Hay and forage .	13	per cent.
Total arable	73·6	per cent., increasing.
Pasture . .	18·6	per cent., increasing.
Vineyards . .	1	per cent.
Fallow, &c. .	5·8	per cent., decreasing.
	99·0	

Cereals, as this table shows, are largely grown over the whole country. Wheat is very little grown in the north; but in the southern *cantons*, Esch, Luxemburg, Mersch, Grevenmacher, and Remich, a good deal is grown. It is almost exclusively winter wheat; only in Mersch and Diekirch is more than about 75 acres of summer wheat grown.

Rye and oats are grown in the parts where wheat is least cultivated, i. e. especially in the north and west: Clervaux, Vianden, Wiltz, Redange, and Capellen. In these rather high-lying plateau districts, with a severe climate, these are the only suitable cereals. Practically all the rye is a winter crop. Oats are by far the most important cereal crop, accounting for nearly half the total grain-crop of the Grand Duchy, and in Clervaux, Wiltz, Vianden, Diekirch, andRedange—all the northern *cantons*—greatly predominating over other cereals. Buckwheat is grown in Clervaux, but not much elsewhere.

Barley is only really much grown in Esch-sur-Alzette and Remich; but it is also grown in moderate quantities in other southern *cantons*, Echternach and Mersch chiefly.

Peas and beans, like barley, are little grown except in the south, where Esch, Grevenmacher, and Remich are the chief districts for pulse. Echternach, Diekirch, Redange, and Capellen also produce a fair quantity, but the northern *cantons* grow hardly any.

Potatoes are an important crop, especially in the north; Clervaux grows them in larger quantities than any other *canton*. Diekirch, Redange, Wiltz, and Luxemburg also grow a good deal. On the other hand beet grows most where potatoes are least cultivated; most of all in Echternach and Remich, a good deal in Luxemburg, Esch, and Mersch, and very little in Clervaux.

Of forage plants, clover and hay are grown most in the north and lucerne most in the south-east; the latter commonest in Echternach and Remich, the former in Clervaux. Pastures are commonest in the south-east, in Capellen, Esch, and Redange.

Thus the characteristic features of agriculture in the various *cantons* may be summed up as follows.

Beginning in the north, Clervaux grows mostly oats and potatoes; rye and clover are also much grown, and there is a fair extent of pasture-land. Wiltz has a higher percentage of pasture and less arable land; what there is grows the same crops as Clervaux. Vianden has about the same proportion of pasture to arable as Clervaux; in proportion to its size it grows less oats and rye, more wheat, and considerably more beet. In Diekirch the quantity of wheat exceeds that of rye, and oats are less grown; there are fewer potatoes and more beet (though here, as indeed in every *canton*, the potatoes still exceed the beet); and a good deal of pulse and lucerne. Redange shows much the same character, but it lies higher, and so approximates more to Wiltz, having less wheat and lucerne, and more rye, oats, and clover than Diekirch. Çapellen closely resembles Redange, but grows much less rye. Mersch grows large quantities of wheat and a fair quantity of barley; a good deal of lucerne and pulse; more beet and fewer potatoes than the average. The same characteristics are seen in Echternach, which, however, grows less wheat and more oats, and a very large quantity of lucerne. Grevenmacher grows much wheat and little rye, and large quantities of pulse, beet, and lucerne. The same is true of Remich, which in proportion to its small size grows even more beet. Luxemburg grows very much the same crops as Mersch. Esch has a high proportion of pasture-land —the highest in the Grand Duchy—and also grows much hay, in which it is second only to Clervaux; otherwise it is unusual chiefly by the quantity of pulse which it grows.

In respect of fertility the yields of wheat, barley, and rye are smallest in Clervaux and largest in the eastern *cantons*; oats, on the other hand, yield best in Esch, Clervaux, Luxemburg, and Capellen, and worst in the east. Potatoes yield best in Esch and Luxemburg, and poorly in the north and east; beet nowhere very well, but Esch and Luxemburg are, on the whole, best for root-crops.

Viticulture

The Moselle valley in Luxemburg does not differ very widely from its German continuation north-eastward, and like that continuation it grows a considerable quantity of wine. All the *communes* of the valley contain vineyards of greater or less extent, especially Wormeldingen, Wellenstein, and Remerschen, in all of which the vineyards amount to 500–750 acres. The lateral valleys have a few vineyards, but these never penetrate far from the Moselle except up the Sauer valley, where they reach in very small quantities to Echternach and even to Vianden.

Considerable quantities of fruit are grown in the valleys. By far the commonest species are apples, pears, and plums; cherries are also a good deal grown.

Live stock

The whole of our area has a small figure for sheep. The figure for Luxemburg, however, is lower than that for any other part. In order to compare different countries it is best to reduce the stock-census figures to a figure per square kilometre (= 100 hectares or 247 acres) of agricultural land. At this rate Luxemburg has only 3·6 sheep per square kilometre; the Rhine province of Germany, 6·5; Belgium, 8·0; Meurthe-et-Moselle, the only considerable sheep-farming district in our area, 15·3. All these figures are very low compared with 22·0 for all Germany, 46·5 for all France, 81·5 for Italy, &c.

For horses, Luxemburg has 12·1; Belgium, 13·2; the Rhine province, 12·7; German Lorraine, 16·9; Meurthe-et-Moselle, 9·8. These are fair average figures.

For cattle, Luxemburg has 61·0; Belgium, 97·1; Rhine province, 70·7; German Lorraine, 45·1; Meurthe-et-Moselle, 15·8.

Luxemburg's figure is highest for pigs, which run 82·9 to the 100 hectares (Belgium, 60·6; Rhine province, 66·4; German Lorraine, 58·6; Meurthe-et-Moselle, 17·8).

In the various *cantons* of Luxemburg horses are by far commonest in Esch; they are also common in Luxemburg, Capellen, Grevenmacher, and Redange, and rarest in Clervaux, Wiltz, and Vianden. Cattle are commonest in Clervaux and Redange; also common in Diekirch, Esch, and Capellen. They are everywhere fairly common, and average about five for every horse. Sheep are common only in Clervaux, Wiltz, Diekirch, and Esch; pigs everywhere, especially in Esch. Bees are most kept in the south, especially in Esch; otherwise most in Dirkirch and Redange.

The number of cattle and pigs shows an increase throughout the last fifty years. The number of horses shows a decline for the same period, though not a large one; that of sheep declined by 90 per cent. between 1860 and 1910. Sheep-farming in Luxemburg may, therefore, be said to be rapidly vanishing.

PART IV: IN GERMANY

The German region included in our area falls sharply into the plain of the north and the hills of the south. The basin of the upper Moselle, from Sierck up to Metz, forms a third division, but such a small one that we have for the sake of convenience treated it with French Lorraine, of which it geographically forms a part.

Roughly speaking the agricultural value of the plain is high, that of the hills (Eifel) very low. Thus the *Kreise* of Cologne and Bonn contain land valued for the land income-tax at 30 marks per morgen (£2 10*s*. per acre); the best land in the *Kreis* of Prüm is valued at 9 marks per morgen (14*s*. per acre). Further, a much smaller proportion of the hill-districts is used for agricultural purposes. In the *Regierungsbezirk* of Düsseldorf 70·7 per cent. is so employed; in that of Aachen, 62·6; in that of Cologne, 62·4; in that of Trier, 58·1; and in that of Coblenz, 52·1. Average for the whole Rhine province, 60·6 per cent. Vineyards account for 0·5 per cent., and meadows and pastures 14·2 per cent. of the whole district.

Arable occupies 52·8 per cent. of the *Regierungsbezirk* of Düsseldorf, 53·3 of that of Cologne, 42·2 of Aachen, 40·8 of Trier, and 38·4 of Coblenz. Over the whole area 53·9 is devoted to cereals. This figure analyses as follows: rye, 20·0; oats, 19·2; wheat, 9·8; barley, 3·1; mixed grains, 1·8. Other crops are leguminous plants (3·36 per cent.), roots (20·9; including sugar-beet, 1·3; potatoes, 13·7; mangolds, 2·5), and forage plants (12·1).

The number of horses in the whole Rhine province (162,357) and that of cattle (1,076,945) is high; that of sheep decidedly low (249,238) and decreasing. This, however, is compensated by a rise in the number of cattle, and by the very high number of goats.

The land is mostly in the hands of small-holders. Two-thirds of the landowners have under 5 hectares (12·36 acres); this accounts for 26 per cent. of the whole area; 96 per cent. have under 20 hectares (50 acres), and account for 74 per cent. of the area. Only 3·94 per cent. possess over 20 hectares, and these account for 26 per cent. of the area. The Rhine province is thus emphatically a country of small holdings.

In recent years a tendency towards an increase in the size of holdings has become apparent. The official statistics distinguish five types of holding: small plots (up to 5 acres), small peasant farms (5–12 acres), medium peasant farms (12–50 acres), large peasant farms (50–250 acres), and large estates (over 250 acres). Of these five classes the first showed a distinct decrease over the whole Rhine province in the years 1895–1907. In the *Regierungsbezirk* of Coblenz, where their predominance was most complete, this decline was most noteworthy; their numbers fell from 19,849 to 16,568. In the same district the small peasant farms increased by 200, the medium decreased by 240, and the large remained stationary; while the large estates, of which there are exceedingly few, increased from 14 to 15. Thus in the Coblenz district the decline in the number of small plots was the only remarkable feature. In the *Regierungsbezirk* of Trier the small plots declined by 2,000; the small and medium peasant farms rose by 400 each; the large peasant farms declined by 100, and the large estates by 5 (27 to 22). Here, then, the decline of properties under 5 acres is more than balanced by a growth in those between 5 and 50 acres. In Aachen *Regierungsbezirk* the large estates alone rose (44 to 51); every other type declined, the small plots by 2,000. In Cologne the large estates rose from 108 to 139; all others declined, the small plots by 3,200. In Düsseldorf again the large estates rose (67 to 69), and all others showed a decline, large in the case of the small plots (1,500) and small peasant farms (1,400), small in the others.

In general, therefore, it may be said that the smallest holdings (up to 5 acres) are dwindling over the whole Rhine province with very pronounced rapidity; in the twelve years we are considering they fell from

67,000 to 55,000, a decline of close on 18 per cent. This rate is tolerably uniform for the whole province. On the other hand, while the large estates are increasing in the plains of the north at the expense of all other types of holding, in the hill districts of the south the small peasant proprietors with 5 to 50 acres are holding their own, and indeed, in the district of Trier, increasing at the expense of large proprietors. These statistics conclusively disprove the view that the farms of the Rhineland are doomed by the custom and law of the land to perpetually increasing subdivision.

As in Belgium, however, each holding is often or generally divided into a large number of separate plots, so that the farmer who owns no more than a few acres may find his property scattered, in plots of a few acres, over several square miles of country. This, as in Belgium, has proved a serious drawback, and a society was formed about 1845 to combat it by 'rounding-up' the land in each *Gemeinde* into continuous farms.

This work has been carried out with special energy since 1886, between which date and 1906, 213 *Gemeinden* have been thrown together and redistributed systematically among the members, four old lots being on average incorporated in one new, and the average size of the new lots being one-third of an acre. At the same time drainage and irrigation works were undertaken, Raiffeisen banks established, and a register of owners instituted.

These improvements chiefly affect the richer district.[1]

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[1] One authority writes that 'the prosperity of *communes* (in the Rhineland) which have redistributed their land is markedly greater than that of others which have not done so'. The suggestion that their prosperity is the effect of this redistribution does not necessarily contradict the view taken in the text; since prosperity stimulates improvements and the effects are cumulative.

In the poorer districts of the Eifel conditions are still very bad, and farming very unprofitable. The poorness of the soil may be judged from the fact that in many parts the land is sown with oats for perhaps three years and then left to lie fallow for fifteen years. In the richer districts clover is usually followed by oats; sugar-beet and wurzels by autumn-sown grain. Catch crops are very generally sown in these districts.

Cattle are generally kept for doing all the draught-work of the farm; these also give tolerably good milk. Near the towns there are extensive dairy farms, which, as a rule, do not breed their own cattle, but import cows in calf from Denmark and elsewhere. Horse-breeding is carefully regulated, and is of considerable importance; the stallions are mostly State property, and are all inspected from year to year, and only licensed for breeding purposes if perfectly sound. There are eight horse-breeding associations in the province, all heavily subsidized by Government.

Practically all farmers are members of one or more associations, and thus obtain agricultural literature, free analysis of soils, manures, &c., and help to support bacteriological and chemical research work. Other important institutions are the agricultural schools, of which there are about forty in the province, where the masters teach in the winter and tour the country lecturing in the summer; the Raiffeisen banks above mentioned; farmers' co-operative clubs for the purchase of implements; machinery, chemical manures, seeds, &c., and insurance societies dealing with fire, hail, life, and employers' liability, and cattle diseases. Co-operation thus plays an extremely important part in the agricultural life of the province, and is found to solve many of the problems due to the system of small holdings.

A great deal of help is given to farmers by the

Government, chiefly through the provincial Chamber of Agriculture, which represents the farmers' interests and attempts to influence legislation in their favour. Thus the Chamber of Agriculture has strongly resisted the attempts of the industrial party to allow the free import of live stock and meat, on the ground that this would damage the German stock-breeder. In contradistinction to the Belgian practice, the theory of protective tariffs to benefit the agriculturist is generally accepted. The Chamber and the Government are endeavouring to promote poultry and bee-keeping, the latter of which is becoming an important source of income to small-holders; the Chamber is encouraging the growth of sugar-beet by advocating low import duties for sugar in other countries and high import duties into Germany, as well as by getting freights reduced for beet and sugar; forestry is being similarly stimulated by financial help, prizes and advice and seedlings given free. Every branch of agriculture in fact is assisted by the Chamber, and through it by the Government.

Viticulture

The wines of the Rhine and Moselle are well known, and constitute the chief product of the districts which make them. The Rhine province as a whole has about 30,000 acres of vineyards, of which half are in the Moselle valley, a third in that of the Rhine, and the remainder on the Nahe and the Ahr. The best Rhine wines are produced outside the Rhine province, and the only vineyards which fall within our area are those of the left bank of the Moselle, the right bank of the Rhine below Coblenz, and the Ahr valley.

Of these the Moselle vineyards are by far the most important. They occupy all the south-facing slopes of the valley up to the level of the terraces which terminate the lower slopes; the rest of these slopes being occupied by fruit-trees. These vineyards produce a great variety of the well-known Moselle wines.

The banks of the Rhine are also covered, wherever their slopes face the south, with vineyards; and the tributary valleys of both streams contain vineyards penetrating as far up into the Eifel as possible. The vine thus grows up the Sauer to Echternach and up the Our to Vianden, and in the lower valleys of the Salm, Lieser, and Alf. In the eastern valleys it grows up the Brohl as far as Oberzissen and up the Ahr to Hönningen. In the northern valleys of the Eifel the vine only occurs at Maubach in the Roer valley. North of this and the Ahr valley it does not grow.

The vines of the Moselle are almost exclusively white, the only exceptions being in a very few vineyards low down the valley. In the Ahr valley, on the other hand, red wine takes precedence of the white Rhine and Moselle wines, which require a warmer climate. Consequently the southern portions of the vineyard area produce more white wines, the northern more red. Thus in 1913 the Moselle valley (including the vineyards of both banks and those of the tributary streams) produced 3,600,000 gallons of white wine worth £646,000, as against 418 gallons of red worth £50; whereas the Ahr valley produced only 420 gallons of white worth £52, against 52,000 gallons of red worth £7,150. These figures may be taken as typical, though the yield varies widely from year to year. The upward limit of vineyards is dictated by the danger of late frosts; but most of the existing vineyards are really subject to this danger, which in some years does immense damage to the vintage.

Agriculture in the Eifel

The agricultural character of the northern plains may be sufficiently gathered from the general note given above. In the hill district conditions are more varied, and consequently a rather more detailed survey of the Eifel massif from the agricultural point of view is desirable.

The chief resources of the Eifel, since the ironworks fell into decay, are agriculture and stock-farming, together with fruit-trees in the valleys and lower parts generally and vines (already described) on the lowest slopes of all. The great central plateaux, Hohe Venn, Schneifel, Ösling, Hocheifel, are bleak and barren; their climate is severe and their soil for the most part extremely poor. The Rheinvoreifel and Moselvoreifel are rather milder and more fertile; and the Pellenz and Maifeld districts near Coblenz are quite good country for crops and fruit-trees. The alluvial valley-bottoms also afford good land and a favourable climate; but they are so very narrow and so much occupied by houses that they are little used for this purpose, arable land being usually sought on the plateau itself. The valley-bottoms are also liable to extremely violent floods, which are always attended by great damage to property and often by much loss of life.

The main plateau is mostly composed of shaly Devonian rocks and greywacke. The latter produces a soil tolerably suited to rye and oats; the Devonian shales mostly weather to an impermeable clay, producing cold, wet soils which on the heights turn to the swamps and peat-mosses of the Venn and Schneifel; but the same clays are extensively found farther south and east and can with care be converted into arable, even if perhaps not into good agricultural land.

Calcareous soils are found in the central Eifel locally, and on a more extensive scale farther south, where the Triassic formation extends in a belt some 20 miles wide between Trier and Diekirch, embracing the lower valleys of the Sauer, Prüm, Kyll, &c., and composing the district which we have called the Moselvoreifel. Here wheat and spelt can be grown as well as rye. The agricultural value of the Moselvoreifel is only relative; its soil is in parts too cold and clayey, in parts too dry for real fertility. A large part of the district is taken up by valleys with their steep, densely-wooded sides. The plateau itself is fairly clear of timber. The Wittlich depression, in the south of this area, is more fertile; its sandstones weather to a light soil, easily tilled and well adapted to potatoes, turnips, cabbages, and tobacco. Finally the Moselberge, the range of low hills intervening between the Wittlich depression and the Moselle itself, are barren and wooded. In the Kyll valley, near Kyllburg and St. Thomas, hops are grown on the sandstone slopes of the valley.

On the high central plateaux the proportion of waste is very high, and that of arable low. The harvest often fails owing to the severity of the climate and the barrenness of the soil; and as the very small proprietors of the plateau cannot afford a failure of this kind, the tendency is to reduce cereals to a minimum and to throw an increasing emphasis on stock-breeding, reinforced by the cultivation of forage plants. Large herds cannot be grazed on the restricted fields of the valley bottoms, and the upper slopes are nowhere suitable for pasture except in the north and on the slopes running down to the plains of Aachen and Bonn, where the high rainfall ensures a good supply of grass and there are rich meadows almost everywhere. Over the greater part of the plateau, therefore, the herds depend for existence on the cultivation of forage. Few attempts have been made to bring into cultivation the waste lands of the

Eifel. Certain areas have been afforested; others, which are at present only second-rate pasture-land, might be brought under cereals. Many parts, too, which are now afforested have a good soil, and if cleared would be of value as agricultural land. This is especially the case in the Hocheifel, where the plateau is broken by basalt cones and the soil is in part volcanic; this region, now almost uninhabited and heavily timbered, might be brought under cultivation wherever the severity of the climate permits. The same is perhaps true of a great part of the northern slopes.

The Maifeld, the plateau south-west of Coblenz and standing above the left bank of the lower Moselle, is a fairly rich district. The main plateau is almost entirely given up to fruit-trees (cherries, apples, &c.); the slopes down towards Coblenz are also largely grown with cherry-trees. The lower, or north-eastern, end of the plateau is agriculturally the best; the soil is a fertile loess mixed with pumice, and there is a good deal of fertile arable. But the whole plateau has a good soil and a fairly good climate; it is sheltered from north and north-west winds by the Hocheifel hills, and good harvests of wheat, barley, and potatoes, as well as of fruit, can everywhere be obtained. The value of the land is shown by the fact that rents are nearly as high as in the low-lying tract of rich country which lies on both sides of the Rhine immediately below Coblenz. There is practically no timber: firewood is brought from the Hocheifel and Hunsrück, where the Maifeld *Gemeinden* own woods. There are no pastures; and in consequence about half the arable is devoted to forage plants, the remainder being mostly given over to cereals.

North of the Maifeld is the Pellenz, a broad valley running down from the interior of the Eifel to the Rhine at Andernach. Its agricultural value is considerable.

It lies only about 300–650 ft. above the sea, and its pumice soil, in fairly level fields almost entirely free from timber, yields good harvests of wheat and barley, potatoes and fodder. This is especially the case with the southern slopes, leading gently up to the Maifeld. Agriculture in the Pellenz is gradually giving way to industry in the shape of stone-quarrying ; but it still retains a considerable importance owing to the natural fertility of the district, and already supported a dense population before the great modern development of the quarries.

The Rheinvoreifel extends from the Pellenz on the south across the Brohl to the Ahr valley on the north. It is characteristically a volcanic district, containing basalt cones, craters (of which the Laacher See fills the largest), and a great deal of lava, tuff, pumice, &c. Its soil is therefore fertile, and as its elevation above the sea is not excessive it is for the most part good agricultural land.

CHAPTER VIII

MINERAL RESOURCES

The area with which we are concerned is extremely rich in certain minerals. In the north, centre, and south there are extensive coalfields, some of which have long been worked while others remain at present untouched; the development of the latter will doubtless have a great influence on the future distribution of industry and population. In the south is an ironfield of immense importance, sometimes described as the most valuable in the world, and undoubtedly the most important in Europe, whose position on the frontiers of France, Germany, Belgium and Luxemburg gives rise to complex international problems. Minor iron deposits scattered over the southern region have practically no commercial importance. These two minerals have given rise to vast iron and steel industry, whose chief centres are in Belgium, Lorraine, and Westphalia.

A limited district on the Belgo-German frontier is rich in zinc ores, which are mostly treated in eastern Belgium. These zinc-mines, though the area which they cover is of no great extent, are an important factor in the zinc production of Europe. Further east is a group of lead-mines.

Finally, the whole district is rich in quarries producing building stone, road-metal, marble, slates, and a great variety of other stones, as well as vast quantities of clay, upon which depend the important and widespread potteries and brickworks of the district.

These minerals, with the exception of those obtained from quarries, which are described in the following chapter, are treated below in detail; for their industrial application the chapter on Industries should be consulted (Chapter IX).

[1] *PART I: COAL*

INTRODUCTION

The intense industrial development of Belgium and the surrounding countries is due in great part, though not by any means entirely, to the existence of enormous coal reserves in these countries. The great coalfields of Westphalia and the Saar valley fall just outside our area, but are described below, in their place, because of their influence on the economic conditions within it. Apart from these the coalfields to be described are: (1) most important of all, the great Franco-Belgian coalfield, extending from Herve and Liége westward along the Meuse and Sambre to Valenciennes, Douai, Béthune and beyond, with its appendages the Boulonnais and Theux fields; (2) the Campine field, running from the neighbourhood of Aix (where it is known as the Wurm-Inde field) through Dutch Limburg into and across the Campine, the sandy plain of north-eastern Belgium; (3) the Peel field, one end of which lies in Holland and the other across the Meuse at Erkelenz in Germany; (4) less important, the numerous little coalfields in Belgium south of the Meuse, to which we shall refer as the Dinant basins. Finally, there are coalfields north of Crefeld on the left bank of the Rhine and on the upper Moselle at Pont-à-Mousson, which are properly treated as extensions of the Westphalian and Saar fields respectively.

The geological facts governing the distribution of these coalfields are of some importance for the practical purpose of determining in what direction extensions may be looked for, and must therefore be briefly described.

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[1] *See* Atlas, Maps 6–11.

The great massif of the Ardennes, Eifel, and Hunsrück, on the left bank of the Rhine, and the Sauerland, Westerwald, and Taunus on the right bank, is composed of rocks older than the coal-bearing strata, and was already elevated when the carboniferous limestone was deposited in the surrounding sea. Over this area, therefore, it would be useless to look for coal.

On the northern and southern flanks, however, great quantities of coal were formed. The southern slope of the massif bears the coal of the Saar valley, extending longitudinally for an unknown distance but only within reach for a short section of its total probable length. Southward, too, it extends in all probability for a considerable distance beyond the limit of present working.

On the northern slope a similar deposit of coal was laid down. This was the great Franco-Belgian coal-field in the west, and the Westphalian and Crefeld field in the east. Like the Saar field these are bounded on one side (in their case the south) by the older rocks of the Ardennes massif. The southern edge of the Westphalian field is quite sharply defined by the outcrop of these older rocks; in the case of the Franco-Belgian field the southern limit is obscured by a longitudinal fault caused by pressure from the south, which has 'telescoped' the strata, forcing the older Devonian rocks up and over the coal-measures, and thus burying the southern edge of the latter. The northern edge, however, which in Westphalia dips gradually lower and lower till it passes out of reach, is in the Franco-Belgian field marked by the rise of another massif of older rocks, the 'Anglo-Belgian plateau', which in the Carboniferous period formed an island including roughly

Brabant and Flanders and reaching across the North Sea to England. The Franco-Belgian coalfield, hemmed in between this and the Ardennes massif, is in consequence a mere trough, narrow and somewhat sinuous, whose limits are (apart from the 'overlap' on the south) well defined and admit of no extension.

The Anglo-Belgian plateau is now worn down and almost entirely covered by formations of a much later date; but its shape can be traced. Between Maastricht and Liége it terminated in a narrow end; westward it broadened, extending from about Antwerp in the north nearly to Mons in the south, and its southern limit cuts the modern coast about Calais. Within this area, therefore, there is no coal; but on the northern edge of the plateau, again, a coalfield is found. This is the Campine coalfield, which, beginning at the northern edge of the Anglo-Belgian plateau, stretches away for an unknown distance northward.

The district between the Campine and Westphalia was probably at one time covered by a continuous coalfield. It has, however, been subjected to very violent faulting; this has broken it up into blocks, some of which have subsided so far as to carry the coal down out of reach, while others, rising, have forced it up to a level at which denudation has carried it away. A few blocks alone, such as the Peel-Erkelenz field, bring the coal to a position where it can conveniently be worked. Further exploration may possibly reveal other blocks or 'horsts' of the same kind, but in the present state of our knowledge this must be considered extremely doubtful.

The Dinant basins alone remain to be accounted for. These are conditioned by a depression within the Ardennes massif itself, between the central hills south of Givet and the abruptly-upstanding ridge (now entirely worn away) of the Condroz. This depression consists of a number of parallel troughs filled with carboniferous limestone, in some of which coal-measures are present. The industrial significance of these is negligible.

In the following detailed description of the coalfields it has been found convenient to group them not physically but politically; that is, to divide (e. g.) the Franco-Belgian field and treat one part under France and one under Belgium. A certain amount of repetition is inevitable in this as in any other method of division.

In estimating the coal resources we have adopted the current distinction between 'actual', 'probable', and 'possible' reserves. Actual reserves consist of seams which have been so thoroughly opened up and surveyed in the course of mining operations that a fairly accurate estimate of their contents can be offered. Probable reserves have been proved by mining or boring, but the correlation of the seams in different pits has not been fully established. Possible reserves have been proved by experimental boring, but the extent of the field cannot be exactly laid down.

The German method of estimating reserves cannot be exactly brought into line with this; they distinguish reserves in mined areas, reserves in areas sampled by boring, and reserves conjectured to exist in unexplored areas. The two last are much less certain than 'probable' and 'possible' reserves respectively. Indeed the second German class corresponds roughly to 'possible' reserves, and the third consists of deposits with which the international method, designed especially to avoid the danger of over-estimation, does not attempt to deal. The very high German figures must therefore be discounted.

The depth to which coal can be worked is at present a controversial subject. In general the Belgian and French authorities regard 4,000 ft. as their working limit, and base their estimates on that assumption. German authorities consider it worth while to estimate the amount of coal to a considerably greater depth (generally 6,600 ft.), but no workings of this depth actually exist. This, it should be observed, is an additional reason why the high figures of the German estimates must be discounted in proportion to the Belgian and French figures.

A. The Coal Resources of Belgium

Although Belgium is well supplied with coal of her own, her position would be unsatisfactory but for the large coalfields occurring in the countries by which she is surrounded. Since 1909 her consumption has increasingly exceeded her production, and since 1906 her imports of coal have been greater than her exports. The kinds of coal which Belgium requires to import are especially those with a high percentage of volatile matter, viz. gas and coking coals and long-flame coals for use in forges, rolling-mills, &c. With ordinary steam and domestic coals Belgium is excellently supplied, and exports a large quantity of the latter to France.

The Belgian coals are of all kinds from anthracite with 16 per cent. of volatile matter to long-flame coals with 37 or even 40 per cent. volatile matter. The stratigraphical disposition of these various kinds is fairly constant. It has only been ascertained in the case of the Sambre–Meuse coalfield, the Campine field not having yet been sufficiently explored. Thus: (i) the percentage of volatile matter is higher in the upper strata and lower in the lower; (ii) within the same stratum, the proportion of volatile matter is highest in the neighbourhood of certain points (at Flénu near Mons and a little west of Seraing near Liége) which seem to coincide with the greatest depths of the basin; (iii) the proportion of volatile matter is regularly higher on the south side of the field than on the north; (iv) finally, irrespective of stratification and any other considerations, the proportion of volatile matter decreases as the depth below the present surface increases. Of these laws it is known that (i) applies to the Campine basin also.

The reserves of coal in Belgium cannot be very exactly estimated. The Campine field may contain about 10,000 million metric tons, and the Sambre–Meuse field about 3,000, mostly in Hainaut.

The Belgian coal-measures belong entirely to the Carboniferous series, and are found immediately above the carboniferous limestones wherever that series occurs. They fall therefore into three groups.

(*a*) *The Sambre–Meuse field.*—The trough occupied successively from east to west by the valleys of the Meuse, Sambre, and Haine carries an almost continuous belt of coal-measures from the German frontier between Visé and Eupen through Liége, Namur, Charleroi, and Mons to the French frontier and beyond. This is the only field of importance in the past and present; it accounts for almost the whole output of Belgian coal up to the present time. It is divided into a number of 'basins', of which the most important are the Liége, Charleroi, Centre, and Couchant de Mons.

(*b*) *Campine field.*—Separated from this by the 'Anglo-Belgian plateau', and occupying another depression of the same kind, is the recently-discovered Campine field. This runs from the Meuse below Maestricht west-north-west in the direction of Antwerp. It contains large reserves of coal and will certainly develop great importance in the future, but up to now it is practically untouched.

(*c*) *The Dinant fields.*—A third depression, whose axis crosses the Meuse at Dinant, contains a number of more or less isolated patches of carboniferous limestone, with which are associated coal-measures. The result is a group of small isolated coalfields lying south of the Sambre–Meuse field, of which the largest lies astride of the Meuse below Dinant. In these little fields denudation has everywhere brought the coal-measures to the surface, producing small basins or pockets of exposed coal. The industrial value of these has never been great, and they are not likely to be exploited in the future. It will therefore be unnecessary to mention the Dinant basins again.

a. The Sambre–Meuse Coalfield

The Sambre–Meuse coalfield (see Atlas, Maps 8 and 9) is the Belgian portion of the great Franco-Belgian field. It stretches right across the centre of Belgium, passing through Mons, Charleroi, Namur, and Liége. The coal-measures are continuous all along this line except at Samson (Namur province), where their carboniferous floor rises up and breaks their continuity.

The total length of the field in Belgium is 115 miles, of which 40 lie in Hainaut, 31 in Namur, and 44 in Liége province. Its width varies considerably; but the maximum reached between Dalhem and Olne, and approached farther west between Erbisoeul and Genly, is about 9 miles. The central part, between these two points, is from 3½ to 4½ miles across. The depth of the deposit varies. Greatest in the west in the 'Couchant de Mons' basin, where it is said to attain 8,000–10,000 ft., it diminishes east of Mons to increase again to 4,500 ft. 2 miles west of Charleroi. East of Charleroi the bottom again rises rapidly, and 6 miles beyond Namur, near the Samson, a tributary of the Meuse, the carboniferous floor rises to the surface, the coal-measures being entirely interrupted.

Beyond the Samson the floor sinks again to attain the depth of 4,600–5,000 ft. between Seraing and Liége. Finally, it rises east of this till near the German frontier it comes close to the surface-level.

It is nowhere necessary to penetrate any great thickness of other rocks before reaching the Sambre–Meuse coal-measures, except in boring through the 'Devonian overlap' on the south of the field (pp. 352, 360). The coal-measures actually reach the surface almost everywhere in the Liége basin, continuously thence up the Sambre–Meuse valley to above Charleroi, and here and there in the Haine valley. In the Centre and Couchant de Mons basins a certain amount of Cretaceous and Tertiary rocks must generally be penetrated, but never so much as in the adjoining French field, or as in the Campine field.

The number of seams varies according to the total depth of the deposit. In the so-called Borinage or Couchant de Mons basin there are 122 seams worth working, at Charleroi 65, in the Liége basin 47. In the shallower district (Basse–Sambre basin) about Namur the number is comparatively small.

There are four main types of coal. These are distinguished as follows.

1. Long-flame coals (known from the village at which they occur as *charbons Flénu*). These occupy the uppermost seams, and are in consequence only present in the Mons basin. These coals are specially in demand for industrial purposes where a long flame is required, e. g. for puddling-furnaces and gas-works. Percentage of volatile matter 28–35.

2. Semi-bituminous coals. These, occupying the seams below those of the Flénu coals, are chiefly used for steam, in glass-works, in gas-works, for domestic purposes, and in the manufacture of metallurgical coke.

3. Bituminous coal or *houille maréchale*, with about

22 per cent. volatile matter. Most of this is taken up by coke-furnaces; it produces a heavy, hard coke, much valued for metallurgical purposes. It is also used by blacksmiths. Below this is another stratum of semi-bituminous coal with a smaller percentage of volatile matter.

4. Dry or short-flame coal. The larger pieces are used for domestic burning; the smaller coal is used for brick and lime kilns, for baking pyrites or reducing zinc-ore, and for the manufacture of briquettes. The volatile matter is about 11 per cent.

These four classes of coal merge imperceptibly into one another, and various intermediate stages are distinguished in the trade.

Five basins altogether are distinguished in the Sambre–Meuse coalfield. The Borinage or Couchant de Mons basin, as its name indicates, occupies that part of the province which lies west of Mons; the Centre comprises the collieries east of Mons and west of the meridian of Landelies and Courcelles; while the Charleroi basin reaches from Courcelles to Tamines. The collieries in the immediate neighbourhood of Tamines and extending thence into the Namur province are known as the Basse-Sambre group. Finally, those of the Liége province are known as the Liége basin.

The Couchant de Mons basin contains all the known varieties of Belgian coal, from the Flénu at the top to the dry short-flame coals at the bottom. Eastward of Mons the upper strata disappear, bringing to the surface along the axis of the field successively the upper semi-bituminous, bituminous, and (about Charleroi) the lower semi-bituminous strata. Beyond Charleroi the dry coal is the only formation present as far as the end of the western field at the Samson.

In the Liége basin the coal with the highest percentage of volatile matter occurs at Seraing and Tilleur, where the total deposit is thickest. This is, however, not identical with the Flénu series, having a shorter flame; the Flénu strata are absent in the Liége basin. The rest of the basin produces all varieties of dry coal.

It should be noted that the east-and-west fault known in the west as the 'faille du Midi' and in the east as the 'faille eifelienne', which limits the Sambre–Meuse coalfield on the south, slopes strongly towards the south, from which direction the Devonian series has been forced over the Carboniferous. Shafts sunk into the Devonian south of the fault, therefore, penetrate through it to the underlying coal-measures. Consequently in the area between Mons and the Sambre coal-mines can be opened to the south of the 'faille du Midi'. The same principle may be applicable to other parts of the district immediately south of the coalfield.

This overlap of the Devonian over the Carboniferous has been worn through by denudation in the neighbourhood of Theux, where the 'massif of Theux' represents the same coalfield as that of the Herve plateau immediately to the north, appearing as it were through the hole in the overlying formation. The coalfield of Theux belongs therefore not to the comparatively worthless Dinant basin but to the Sambre–Meuse system. Unfortunately, however, it is almost entirely barren.

The coals with high percentages of volatile matter contain much inflammable gas, which gives serious trouble in mining operations, especially in the southern part of the Sambre–Meuse field. This is a serious objection to extending the exploitation of these extreme southern portions of the field.

The following table shows the comparative productivity of the various basins of the Sambre–Meuse field in 1906. This may be taken as a typical year, the various figures not varying greatly in other years and the total remaining approximately constant till 1913.

District.	*Number of Collieries.*	*Number of Pits.* *Working.*	*Number of Pits.* *Constructing or in Reserve.*	*Production in Metric Tons.*
Couchant de Mons	22	63	9	4,895,240
Centre	10	39	2	3,609,410
Charleroi	37	99	19	8,202,350
Basse-Sambre	11	17	5	857,160
Liége	42	78	8	6,045,430
Total	122	296	43	23,609,590

The most important movements since about 1900 are a decline in the production of the Basse-Sambre (though not in the number of pits working) and a very considerable increase in that of the Liége basin.

b. The Campine Coalfield

A great quantity of coal has since 1902 been found to exist in the north-east of Belgium, in the Limbourg and Antwerp provinces, underlying the low, sandy, and often swampy plain known as the Campine. The value of this deposit, containing as it does more than three times the reserves of the Sambre–Meuse field and having a high proportion of the long-flame and gas coals in which Belgium is otherwise poor, is very great; but it is somewhat discounted by the fact that the whole field is deeply buried under an accumulation of later formations, which moreover contain immense quantities of water. Shafts would therefore have both to be very deep and to be constructed with special precautions against flooding during construction and afterwards; a trustworthy estimate reckons the cost of sinking a double shaft to the surface of the coalfield at nearly half a million sterling. It seems to be the case, however, that in spite of these difficulties the Campine field would amply repay working. Its practical limits and the character of the coal have been more or less established by experimental soundings, and its commercial importance may be estimated from the fact that even ten years ago applications had been made for concessions extending over the entire explored area.

It may therefore be confidently asserted that the Campine field will be extensively worked in future years. Mining began some time ago, but no workings have yet begun to produce results. When the field is fully developed, which (granted the necessary capital) may be in another ten or twenty years, it will be one of the most important economic factors in Belgium. The Campine district, extending from Antwerp to the Meuse between Maastricht and Maeseyck, will become one of the chief industrial districts of Belgium, if not the chief; the lines of communication, already good, will doubtless undergo great development, and industries of all kinds, especially perhaps metallurgical industries, will gravitate to the new coalfield. This development would naturally begin at the eastern end of the Campine, west of the Meuse, where the coal is nearest to the surface; hence it may be expected to spread westward as the coalpits increase in depth. The Campine coalfield is thus of crucial importance for the future of Belgium.

The coalfield, like the other Belgian fields, belongs to the Carboniferous series. This series occurs in a strip running roughly from Antwerp to Maastricht; bounded on the south by the older rocks of the 'Anglo-Belgian plateau', and dipping northwards deeper and deeper towards the Dutch frontier. Over this formation lie the coal-measures, forming a parallel strip, the strata similarly dipping to the north. On the south, therefore, the oldest strata alone are present; farther north the upper strata appear above them one by one. The full series of coal-measures therefore exists in the north of the field only, and it is here alone that the upper seams can be found.

The whole surface of the field is however buried beneath a deposit of Tertiary and Quaternary formations, thinnest in the south and east of the field and thickest in the north and west. In the extreme east the thickness varies from about 1,000 ft. in the south at Opgrimby to about 1,800 ft. at Berkeinde; in the west it varies from about 2,200 at Sandhoven to 2,800 at Vlimmeren. The lower strata, therefore, can be reached nearer the surface than the upper; the former, from Genck to the Meuse at Vucht, lie about 1,200 ft. down, while the latter, where they appear a few miles farther north, are 1,500–1,800 ft. below the surface.

Five main strata or groups of seams are distinguished, represented by the broken red lines on the map (Atlas, Map 10). No. I, in the north, contains 37–42 per cent. volatile matter; that is to say, it supplies a valuable long-flame coal for use in gas-works, rolling-mills, forges, &c. No. II, underlying I and appearing on the map south of it, also gives a long-flame coal suitable for the same purpose and averaging about 37 per cent. volatile matter. These percentages are considerably superior to that of Flénu coal (28–35 per cent.), which is the highest hitherto found in Belgium. No. III gives a bituminous coal with 25–27 per cent. volatile matter in that portion which lies east of the meridian of Hasselt; west of this the proportion of volatile matter is 28–38 per cent., so that the coal can be classed as long-flame, closely resembling the Flénu product. No. IV gives a bituminous coal with about 22–24 per cent. volatile matter. No. V gives semi-bituminous and dry coals (12–20 per cent. volatile matter) in the district east of the meridian of Hasselt; west of this the coal is bituminous, with 19–24 per cent. volatile matter.

From this summary of the types of coal in the Campine field it appears that the most important deposits are those of long-flame and bituminous coals. These being precisely the qualities of which Belgium's consumption is most in excess of her production, the working of the Campine deposits is bound to exercise a great influence on the future of Belgian industry.

The limits of the Campine field are more or less accurately determined on the south, where the coal-measures definitely come to an end; on the other sides the field is limited rather by increasing difficulties of working than by definite natural boundaries. To the east a fault, obliquely crossing the Meuse near Urmond, throws the coalfield down to a depth of below 4,000 ft., or too far down for mining purposes (see above, p. 354); later it rises again to the Dutch Limburg coalfield. On the north the strata apparently dip with fair regularity at about 8° towards the Dutch frontier. Soundings have not yet determined whether this is the case, or whether there is a longitudinal fault throwing down to northward. If the dip is regularly maintained the uppermost strata would already reach a depth of 4,000 ft. at Neerglabbeek and Meeuwen: that is to say, the mining zone would extend only 3 miles north of the southern limit of stratum I in the neighbourhood of Opglabbeek. Farther west the angle of dip is much less, averaging west of Hasselt about 4° or 5°; this would extend the area of possible mining operations to a line running from Wychmael in the direction of Turnhout. This northern limit of possible mining operations, however, must be regarded as conjectural (see Atlas, Map 10).

On the west the limit of the field is determined by the increasing thickness of the Tertiary and Quaternary formations. This increase seems to be fairly regular, and would, if this regularity continued, produce a thickness of 4,000 ft. in 50 miles beyond the Sandhoven-Vlimmeren line, i.e. about the mouth of the Eastern Scheldt. It is therefore possible, unless the slope increases or is interrupted by faults, that the Campine field may extend at accessible depths right across the Dutch frontier north of Antwerp and for a considerable distance beyond. Some engineers consider that mining in this area would never be profitable, and that even the Antwerp province contains few sites that would repay the cost of sinking shafts.

The average quality of coal-seams in the whole depth of the coal-measures varies from 1–2 to 4 per cent. In parts, especially between strata IV and V, there are considerable thicknesses of barren ground.

The reserves of the Campine field in its explored area only, which must be classed entirely as ‘ possible ’ reserves, are estimated at 10,000 million metric tons.

B. The Coal Resources of France

(within and bordering on the area)

In the period immediately preceding the war France consumed annually about 63 million metric tons of coal. Her total output was only 40·4 million tons; she had therefore to import an annual quantity of about 22 million tons. Of this, over half came from England, and half the remainder from Belgium; Germany contributed only about 3 per cent. of the total French import.

(*a*) Of the 40 million tons mined in France, 27·73 million tons are produced in our area, the rest of France contributing 12·67 million tons. Over two-thirds of France’s total output, that is to say, comes from the one great coalfield of north-eastern France, the so-called Valenciennes field in the *départements* of the Pas-de-Calais and the Nord.

(*b*) A continuation of this field is to be found in the Boulonnais basin, supplying a link between the Valenciennes and Kent fields. Its industrial value does not appear likely to be very great.

(*c*) A third field, falling just outside our area but described below on account of its possible relation to the *minette* ironfield, is the Pont-à-Mousson basin south of Metz. Geologically this is a prolongation of the Saar field, as the Boulonnais basin is of the Franco-Belgian. The industrial value of this basin too must be set down as very problematical. The French supply of coal is in fact quite insufficient to meet even her present needs—which needs would increase vastly were she to regain the German portion of the *minette* field—and there seems to be little if any possibility of developing fields at present untouched.

The dependance of France on foreign countries for coal produces a series of complicated effects on her industrial development. Thus, French coal costs on an average 15·63 francs per ton at the pit's mouth, as against 16·56 in Belgium and 13·15 in Germany; but the insufficiency of her home production and the expense of importing coal from abroad raise the average price of coal to the French consumer to 19 francs. This price exceeds the Belgian average by 12 per cent., the German by 36 per cent., and the British by 60 per cent.

The position with regard to coke is if anything still more unfavourable. Six million tons are consumed annually by the French iron and steel industry, and three-quarters of this comes from Germany, where the price is fixed by a syndicate. The effect of this on the iron industry is that French pig-iron is 7 francs per ton dearer than Belgian, 14 francs dearer than German, 21 francs dearer than British, and 25 francs dearer than American. These prices have far-reaching effects primarily upon French iron- and steel-works and secondly upon all French industry.

a. The Valenciennes Coalfield

The Valenciennes coalfield is the most important deposit of coal in France. This is the case whether it is considered from the point of view of area, output or reserves.

This field is the continuation of the Sambre–Meuse coalfield in Belgium, and does not differ from it in structure. The main structural features repeat those of the Sambre–Meuse coalfield, and may be described as follows:

The coal-measures occur overlying the Carboniferous limestone in a trough running roughly east and west. This trough is completely filled with coal-bearing formations, varying from flaming bituminous coals in the upper seams to dry anthracitic coals in the lowest. The northern slope of the trough is comparatively gentle; but on the south a disturbance has taken place, caused by a thrust from the south which has forced the older Devonian rocks of the Ardennes massif over the southern edge of the trough, crushing and folding the coal-measures in the process. The result is that while in the northern part of the basin the strata dip regularly southwards, in the southern part they are folded upon themselves and in part overlain by the older Devonian formations. This southern region is not fully explored, and is not included in the area shown on the map (Atlas, Map 6).

Finally, the whole synclinal dips westward. While the Carboniferous series and the coal-measures crop out freely in the Belgian part of the field, in the French part they nowhere appear on the surface, but are hidden by a stratum of Cretaceous rocks whose thickness increases as it travels westward.

The total length of the Valenciennes basin from the Belgian frontier to Fléchinelle is something over 60 miles. Its breadth is strictly speaking unknown, because that southern portion which has been overlain by the ‘ telescoped ’ Devonian rocks has not been fully explored. The breadth is therefore calculated to the edge of the Devonian overlap, and it must be borne in mind that a considerable portion to southward is omitted in the following estimates.

At the Belgian frontier the breadth of the basin, so defined, is 7½ miles. Westward it expands to 9½ miles in the longitude of Denain. In the neighbourhood of Aniche the breadth varies from 5 to 6 miles, and at Auby a promontory of older rocks reduces it to 3 miles. Thence it expands again to 7½ miles in the region of Lens, beyond which it narrows to a point at Fléchinelle.

The coal-seams are very numerous, but seldom of any great thickness. In general this is less than 3 ft., and it rarely exceeds 6 ft. The depth of shafts is of course small on the shallow northern edge of the basin, and increases thence to the deepest part. It nowhere greatly exceeds 3,300 ft.

The coalfield is divided into two basins, the Nord basin and the Pas-de-Calais basin respectively, the division being formed by the narrow passage above mentioned at Auby.

The Nord basin is 28 miles long ; the Pas-de-Calais basin 36 miles. The dip of the strata towards the bottom of the trough is more marked in the former than in the latter, where they are often horizontal or nearly so. Moreover, the Pas-de-Calais basin is distinctly the richer of the two, especially at medium depths, and in consequence workings have developed in this basin more rapidly. The annual output is about 21 million metric tons, as against 7 in the Nord basin. The richest deposits seem to occur in a strip about

3 miles wide running east and west through Lens, between Auby (north of Douai) and Bruay (south-west of Béthune).

The basin is terminated westward by the rising of the carboniferous floor, the upper strata disappearing in consequence one by one. There is therefore no low-level continuation of this field to the west, as there probably is in the case of the Campine, and certainly in the case of the Saar, fields.

As regards the southern low-level extension of the coalfield beneath the displaced Devonian strata, this is known to exist east of Valenciennes and over a large area south of Lens. In the latter section mines have been opened, notably at Liévin and Drocourt; others have been begun S. of the Drocourt–Bruay area.

The total area of the Valenciennes basin is 405 square miles. The total production up to 1912 was 685 million metric tons; the reserves are estimated in millions of metric tons as follows:—

	Certain.	*Probable.*	*Possible.*
Anthracitic (7–12 per cent. v.m.)	520	580	570
Semi-bituminous (12–17 per cent. v.m.) . . .	580	550	1,070
Coking (17–26 per cent. v.m.) .	1,010	980	700
Flaming (26–32 per cent. v.m.) .	1,010	560	360
Gas coal (over 32 per cent. v.m.)	670	340	20
Total . . .	3,790	3,010	2,720

Total reserves of all kinds, 9,520 million metric tons.

b. The Boulonnais Basin

This must be considered as an extension of the great Franco-Belgian coalfield. That field terminates at Fléchinelle; but the formation reappears 25 miles to north-west near Hardighen. Here it forms the Boulonnais coalfield, bounded by a complicated series of faults and covered for the most part by Jurassic and Cretaceous formations, and constituting a link between the Valenciennes coalfield and that of Kent.

The Boulonnais basin is limited on the east by the outcrop of the underlying Carboniferous, and to north and south by faults; westward it dips beneath the Cretaceous and can be traced by boring. But this underground continuation is of little value; the coal-measures are thin, and gradually disappear.

Very roughly, the basin measures 5 miles from east to west by 1½ miles from north to south. The coal strata belong to the Westphalian series and are about 1,000 ft. thick. In about 350 ft. of ground 6–8 seams of coal have been found, containing 36–38 per cent. of volatile matter and having an aggregate thickness of 16–23 ft. A boring at Strouanne, on the coast between Wissant and Cap Blanc Nez, after penetrating 553 ft. of Secondary strata, found three veins of similar coal in 410 ft. of coal-measures before reaching the Carboniferous. This lies directly opposite the Kent field.

The Boulonnais basin is contorted and intricate in its structure, which is convex (anticlinal) in section. It does not seem to promise great results. With an area of 3,700 acres it had produced 2 million metric tons by 1912, and holds reserves estimated at 10 million tons 'probable' and 50 million tons 'possible', or 60 million metric tons in all.

c. The Pont-à-Mousson Basin[1]

This field lies entirely in the category of 'possible' reserves. It is only known by borings, and has not yet been worked at all.

Essentially it is a continuation of the Saar coalfield, here covered by thick deposits of Lias, Trias, and in places Permian. These contain water-bearing strata whose penetration by pits would present serious and perhaps insuperable difficulties.

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[1] Atlas, Map 7.

It appears from a series of borings that the coal-measures form an anticlinal ridge running south-west across the frontier, whose axis passes through Eply and Atton, a little south of Pont-à-Mousson, and thence to Martincourt. The summit of this ridge was considerably denuded before the formation of the Trias, so that along the upper part of its axis near the frontier the lower coal-seams alone remain. The area of workable coal-measures is 37,000 acres; the richest part is east and north-east from Pont-à-Mousson.

This area certainly does not exhaust the coalfield, which probably continues in every direction beneath an increasing thickness of Secondary rocks. It may be considered, however, to exhaust the area workable in the present conditions. If, as seems probable, the anticlinal continues towards Saarbrücken, the intervening area may be considered as potential coalfield. See, however, below, under the Saar field, pp. 373–4.

The Pont-à-Mousson field is distinctly less rich than that of the Saar valley. In view of the difficulty of procuring coal to satisfy the requirements of the French *minette* ironfield, it might be found worth while to exploit this deposit, which lies directly between the two great iron-mining centres Nancy and Briey. But if a readjustment of the Franco-German frontier in the future should throw open the Saar basin to French enterprise, the poorer and less accessible deposit of Pont-à-Mousson would no doubt be left for the time being untouched.

The 'possible' reserves of the Pont-à-Mousson field are estimated at 330 million metric tons.

C. The Coal Resources of Germany (within and bordering on the area)

The German coalfields lying strictly within our area are of secondary importance only, with the possible exception of the Crefeld basin. Setting this aside, there remain the Erkelenz and Wurm–Inde or Aachen districts, both of comparatively small extent. The lignite deposits of the Cologne neighbourhood may for the present be ignored.

These three basins, Crefeld, Erkelenz, and Aachen, are the converging ends of three important coalfields, those of Westphalia, the Peel, and the Campine respectively. The second and third are described in detail under Holland and Belgium, and their German extensions do not differ in any important respect from their main body.

Immediately outside our area, however, lie two coalfields of the very highest importance. The Westphalian field on the right bank of the Rhine, producing well over half the total coal output of Germany, cannot be separated from the Crefeld basin on the left bank, and indeed cannot be ignored in any consideration of the economic factors of the lower Rhine valley. We shall therefore describe this field and give some account of its value and importance, although it lies outside the strict limits of this work.

Of even greater relative importance is the Saar coalfield. Its importance comes not so much from its purposely restricted output, which is only one-sixth of the Westphalian field's, as from its position in close proximity to the *minette* ironfield, which it seems designed by nature to supply with coal. Saarbrücken and Briey, the centres of the two fields, are indeed only 45 miles apart, and at their nearest point the coal and iron are separated by barely 15 miles.

We shall therefore take into consideration all the above fields, which in 1910 produced together 106·2 million metric tons, or over two-thirds of the total output of Germany.

a. The Saar Field

The limits of the Saar field[1] are less accurately known than is the case with any other German coalfield. In German Lorraine 118,200 acres are at present conceded for mining purposes, and probably contain valuable seams to a depth of over 6,500 ft. In Prussia about 277,000 acres are probably workable, and in the Bavarian Palatinate 124,000 acres have been conceded, of which, however, only about 13,500 are sufficiently known to allow of an estimate of their resources.

The coalfield lies in a depression running north-east and south-west and extending transversely in the centre from about Dillingen in the north-west to Saarbrücken in the south-east. It is bounded on the south-east by a long and fairly straight fault, beyond which the coal can still in places (as at St. Ingbert) be reached at a greater depth. The north-eastern and south-western extremities of the field dip downwards, and the extent to which they may ultimately be workable is not yet known. The dip to south-west is, however, interrupted by a transverse fault running through Solgne and Achatel, which lifts the coalfield again to within a little of the surface, to dip again past the French frontier. This south-western section, extending from the Solgne fault to Martincourt beyond the Moselle, falls mostly in France, and constitutes the Pont-à-Mousson coalfield described above. Between the Solgne fault and the south-western edge of the hitherto worked area at Hémilly and Maiweiler lies an unexplored district about 12 miles long, in which coal probably exists but lies in any case at a very considerable depth. German authorities state that the depth appears to be such as to put working out of the question.

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[1] Atlas, Map 7.

Longitudinally the field extends north-eastward to near the confluence of the Nahe and Glan, i. e. nearly 50 miles north-east of Saarbrücken. This extension has, however, only been worked in a district 10 by 3 miles in extent in the Palatinate, at the Potzberg, Hermannsberg, and Königsberg mines. Here the upper strata of the coalfield, the so-called Ottweiler beds, are worked. Boring has touched the deeper strata at about 3,300 ft. down, but no galleries have been driven, and it is doubtful whether these strata can be profitably exploited. North-eastwards, beyond the Königsberg mine to the edge of the Rhine valley trough, it is extremely doubtful whether further workings are practicable.

The transverse extent of the field (from north-west to south-east) is also doubtful. In the north-west the probable boundary is the Nied valley, continued south-westward by the French Nied and north-eastward by a line through Düppenweiler. This, however, is a purely theoretical boundary, and accessible and valuable seams are not known to extend so far. The boundary of the known area must be placed on a line running from Dillingen, 3 miles north of Saarlouis, south-westward through Ottendorf (Ottonville) to about Bienville on the German Nied and thence south-south-east for 6 or 7 miles by Hémilly to Maiweiler, from the neighbourhood of which it runs fairly straight to Saarbrücken and beyond, following the line of a great fault. To south-east of this fault it is probable that seams of considerable value run, at a depth of 6,000–7,000 ft., for some distance. At St. Ingbert this low-level field is reached by mines.

The system of coal-seams in the Saar field may be briefly described as follows. There are four main groups. The lowest are the bituminous coals (*Fettkohlen*) which fill the bottom of the basin and rise to the surface on its southern edge from Saarbrücken to Neunkerchen. These are altogether some 4,200 ft. thick, containing about twenty-three seams with an aggregate thickness of 100 ft., about 2·2 per cent. of the whole stratum. This series is by far the most important element in the Saar basin, and its position at the bottom of the deposit detracts greatly from the easy and profitable exploitation of the deeply buried portions of the field. It is worked in many places in the parts nearest Saarbrücken, but in Lorraine only at Heiligenbronn and Kleinrosseln. Its lowest seams are not worked at all except near Saarbrücken, and are said to lie too low to be worked anywhere in Lorraine. On the other hand, they are thicker and richer in the south-west generally than in the north-east.

Above this series lie the lower flaming coals (*liegende Flammkohlen*). These crop out along an irregular belt parallel to and north-west of the outcrop of *Fettkohlen*, and passing a few miles to the north of Saarbrücken. The total thickness of the deposit varies from about 40 ft. in the north-east to 800 in the south-west, and the coal-seams, whose aggregate thickness varies from 30 to 92 ft., occupy on an average 8 per cent. of the total depth. But of this total thickness much is accounted for by seams too thin to be worked. The workable seams alone vary between 1·05 per cent. of the whole in the south-west to 3·36 in the north-east. The entire deposit is sharply delimited above and below by strata of clayey shale. It is extensively worked in the Saar valley; in Lorraine it is worked at two sites (Kleinrosseln and Spittel or l'Hôpital).

The third series consists of the upper flaming coals (*hangende Flammkohlen*). In general character these resemble the series last described, and crop out along a line which crosses the Saar half-way between Saarbrücken and Saarlouis. The total thickness of this series also increases considerably from north-east to south-west, in proportion to the increasing total depth of the basin; but the total amount of coal contained in it does not seem to increase correspondingly. It has not, however, been very extensively explored in Lorraine. Its total thickness varies from 2,700 ft. in the west (with 273 ft., or 1·02 per cent. of workable coal) to 1,250 ft. in the east (with 440 ft., or 3·61 per cent. of workable coal). The total thickness of this series is therefore about three times that of the lower flaming coal deposit, while the proportion of workable coal is about the same in the two series. Both absolutely and (still more) relatively to the total thickness of the series the thickness of coal is greater in the eastern and central districts than in the western.

The uppermost of the four strata is the dry-coal series (*Magerkohlen*). This series is 800–1,000 ft. thick in the east, increasing to 2,000 ft. on the left bank of the Saar. Whether the thickness increases further to the south-west does not seem to be known.

The whole of the Saar coal appears to be of somewhat inferior quality, and its exploitation is not very actively pushed; the yearly output could be greatly increased if desired, but it is restricted to avoid competition with the Westphalian coal, and the Saar ironworks are all old and have undergone no recent development.

The reserves in the Saar field are calculated as follows (in millions of metric tons):—

Depth.	*Dry Coals.*	*Flaming Coals.*	*Bituminous.*	*Total.*
0–4,000 ft. . . .	717	4,966	4,086	9,769
4,000–6,600 ft. . .	216	2,350	4,213	6,779
All depths . . .	933	7,316	8,299	16,548

These reserves are all contained in seams that have been to some extent explored and worked. The reserves contained in unexplored portions of the field are described as very considerable.

b, c, d. The Lower Rhine (left bank) Coalfields

In the immediate neighbourhood of Aachen coal has been known to exist ever since the Middle Ages. It was, however, only in the later nineteenth century that attempts were made to determine the relation between this field and that of Westphalia. A series of borings undertaken about the end of the century revealed the existence of considerable fields bridging the gap and occupying parts of the region between the Rhine and the Meuse.

A continuous coalfield at one time covered the whole of this area. It has, however, been broken up by a complicated system of faults which depress and elevate alternate sections of the field. The depressed areas have subsided to such a depth that it seems useless to explore them for the purpose of extracting the coal they contain ; the elevated portions or 'horsts', on the other hand, bring the coal within a comparatively short distance from the modern surface. Some horsts have elevated the coalfield to such a height that denudation has carried away part or the whole of the coal-measures.

The result is that three workable coalfields have been identified within the area under consideration. These are the North Crefeld, Brüggen–Erkelenz and Inde–Wurm fields, with areas of 317, 87, and 93 square miles respectively.

All these coalfields, with the exception of a small area in the Wurm–Inde district, are covered by a greater or less depth of Tertiary formations. They are also in part overlain by older rocks, viz. Cretaceous and Permian.

The following table gives the thickness of these superincumbent formations.

	Tertiary.	*Cretaceous.*	*Permian.*
N. Crefeld	300–1,600 ft.	0–490 ft. (only in W.)	0–3,000 ft. (only in N. and E.)
Brüggen–Erkelenz	500–1,800 ft.	0–260 ft. (only in E.)	
Wurm–Inde	0–2,300 ft.	0–400 ft. (only in SW.)	

b. The North Crefeld Field

This field extends from a little north of Crefeld down the left bank of the Rhine to Xanten. It is bounded on the south by the Crefeld horst, an elevated area of barren coal-measures.

Four series are here distinguished. The lowest and richest is the dry coal (*Magerkohle*) with up to 17 or 20 per cent. of volatile matter ; this is about 4,000 ft. thick and contains 0·8 per cent. of workable coal in thirteen seams. Above this is a series of bituminous (*Fettkohle*, 20–30 per cent. v.m.) seams 800 ft. thick in all, the coal lying mostly in its upper half and constituting 2·7 per cent. of the whole. The third series is that of the gas coals, with over 30 per cent. of volatile matter. Here again the workable seams, with few exceptions, lie in the upper half. The total thickness is 800 ft., and the percentage of workable coal is 2·0 per cent. of the whole. The fourth series, that of the flaming gas coals (*Gasflammkohle*), also with over 30 per cent. of volatile matter, is not much worked. Its lower 330 ft. contains one seam, 1·2 per cent. of the whole.

The resources of these four strata are calculated as follows in millions of metric tons to a depth of 4,000 ft. :

Flaming gas coal	14
Gas coal	338
Bituminous coal	3,200
Dry coal	3,548
	7,100

c. The Brüggen–Erkelenz Field

This field is bounded to north-east and south-west by depressions, known respectively as the Venlo and Roer valley depressions. To the north-west it is continuous with the Peel horst of Holland.

The series here has not yet been exactly correlated with that of the north Crefeld field. In general the deposit lies much nearer the surface, and does not seem to extend more than 2,300 ft. below it.

The lowest group of seams yields a semi-anthracitic coal with below 10 per cent. of volatile matter. This formation is found on the Wasserberg horst. It contains only a few small seams. Above this lies the only really important formation of the Brüggen–Erkelenz field, a dry coal with 10–15 per cent. of volatile matter. The total thickness of workable seams is 26 ft. Above this come, in order, a dry coal with 15–17 per cent. of volatile matter and a coking coal with over 17 per cent. The amount of coal in these is quite small.

The resources are calculated as follows:

Coking coal Upper dry coal Lower dry coal	1,732
Semi-anthracitic	14
Total . . .	1,746 million metric tons.

d. The Wurm–Inde Field

This field consists of two basins separated by a horst (the so-called Saddle of Aachen running east-north-east from Aachen) from which the coal-measures have disappeared. The Wurm valley basin, north-west of this horst, is continuous with the Dutch Limburg and the Campine fields. The Inde basin is isolated, but appears to belong to the same series.

The coal is distinguished as consisting of four varieties: dry coal, flaming coal, coking coal, and gas coal. The character of the coal and its content in volatile matter appear to vary very considerably from place to place, and it is hardly possible to lay down general principles as to the relation of the seams found in different mines. So far as any conclusions have been reached they are as follows.

The dry coal, which lies lowest, is contained in a deposit altogether 1,250 ft. thick, of which coal-seams occupy in many places as much as 50 ft. The flaming coal occupies 10 ft. in a deposit 650 ft. thick, and the coking coal 18 ft. in 1,000 ft. of deposit. These two formations often merge into one, giving a total deposit of 1,650 ft. containing 28 ft. of coal. The gas coals occur in a deposit 800 ft. thick, coal-seams occupying 10 ft. of this.

The resources of these two basins have been estimated to a depth of 3,300 ft. The figure offered is 1,612 million metric tons. The amount altogether extracted by 1913 was small; it consisted of about 15 million tons, almost exclusively dry coal.

Total Reserves of the Lower Rhine (left bank) Fields

(*a*) North Crefeld	7,110
(*b*) Brüggen–Erkelenz	1,746
(*c*) Wurm–Inde	1,612
Total . .	10,468 million metric tons.

Besides these reserves in areas explored by mining, there are said to be considerable reserves in areas not yet explored.

e. The Lower Rhine (right bank) Field

This, the great Rhenish–Westphalian field,[1] is the most important source of coal on the Continent. It is immediately continuous with the north Crefeld coalfield, and, in a larger sense, with the Belgian and English fields.

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[1] Atlas, Map 11.

It consists of a series of coal-deposits sloping downwards to the north and cropping out at the surface to the south. This outcrop takes place in the Ruhr valley; south of this older rocks rise to the surface and the coal ceases. Northwards, in the Lippe valley, the dip of the strata causes them to be overlaid by Permian, Cretaceous, and Tertiary formations, whose increasing thickness requires progressively deeper workings until, beyond the Lippe, it becomes practically impossible to reach the coal at all.

Three zones are thus distinguished. First comes the zone of mines, including the Ruhr valley and supporting a large number of great industrial towns, Duisburg, Ruhrort, Mülheim, Essen, Gelsenkirchen, Bochum, Dortmund, &c. This zone extends eastward to Hamm and northward to Recklinghausen. North of this is the zone of borings, containing a few mines and a large number of experimental shafts, and including the valley of the Lippe as far north as Haltern and Lüdinghausen. The third zone, further still to the north, is practically unexplored; but German authorities consider it certain that the coal-measures continue to run at an increasing depth for a great distance northward.

The coal is distinguished into four main varieties. Lowest and thickest is the deposit of dry coal; above this come in order bituminous, gas and flaming gas coals. In the extreme south of the field the dry coal comes to the surface and is alone present; further north the other strata appear in order, the dry coal being gradually buried by them. South of the line Essen–Bochum–Dortmund dry coal is almost exclusively found; and the same line marks the southward limit of the overlying deposit of Cretaceous marls. The district south of this line is therefore the best, especially for dry-coal mining at moderate depths. About this line the other varieties appear, and the increasing depths soon place the dry coal almost or entirely out of reach.

In addition to its general northward dip the field is affected by a folding process which has produced a series of alternate troughs and ridges in the coal-bearing strata. These troughs strike parallel to the strike of the field, i. e. east-north-east and west-south-west. They are steeper and narrower on the south; further north the folding is less violent, the troughs are broader and their sides less steep. The five troughs situated in the worked portion of the field are known (from south to north) as the Witten, Bochum, Essen, Emsch, and Lippe basins respectively. The effect of this formation on practical mining is that in the bottom of the troughs the dry coal is inaccessible, except in the shallow troughs of Witten and possibly Bochum; whereas on the ridges the lower strata of coal come up to within a workable distance of the surface. In the same way, the basins further north introduce for the first time the upper strata; so that in the Essen basin gas coal is chiefly worked, and in the Emsch and Lippe basins flaming gas coal; while, on the ridge between the two last, the bituminous and dry coals appear immediately beneath the surface-formations.

Other variations of level are due to faults. These are, however, relatively few and unimportant compared with the great faults of the coalfields across the Rhine.

The four main qualities of coal may be described briefly as follows. The dry coals contain 5–20 per cent. of volatile matter and are used for household consumption, industry, and the manufacture of briquettes. The formation is on average 3,600 ft. thick, and contains 36 ft. or 1 per cent. of coal, of which, however, only about half is worth extracting. The bituminous coals, with 20–33 per cent. of volatile matter, are used for industrial purposes and for coke. They comprise seams aggregating 86 ft. thick, or 4·9 per cent. of the total deposit of 2,000 ft. Of these seams 76 ft. are worth extracting. The gas coals have 33–37 per cent. of volatile matter, and are used solely in the manufacture of gas. The formation is 2,300 ft. thick; the total seams aggregate 96 ft. or 4·1 per cent. of the whole, the workable seams nearly 69 ft. The flaming gas coals are used for industrial and household purposes; they have 37–45 per cent. of volatile matter. The deposit is 1,740 ft. thick, and includes 38 ft. (11·6 per cent.) of coal, of which 22 ft. are comprised in workable seams. The total thickness of the coal-bearing strata is therefore 9,640 ft., and it follows that the lower strata are inaccessible except where denudation has removed a considerable proportion of the upper.

The northward limit of exploitation is dictated by the thickness of the later formations which overlie the coal-measures in the north. About the latitude of Münster this is already 4,000 ft., and therefore mining can hardly be contemplated further north than here. Clearly, however, a large area north of the Lippe, extending perhaps a little way across the Dutch frontier, might be worked with deep pits, and must be considered a possible extension of the field as worked at present.

The actual and probable reserve in this field, i. e. that included in the area already mined, is estimated at 56,344 million metric tons; those in the bored and unexplored areas at 157,222 million tons. The latter includes more than is included in the category of 'possible' reserves. No coal is here included which lies at a depth greater than 6,600 ft.

f. Brown Coal (Lignite) in Germany

In the neighbourhood of Cologne there are large deposits of brown coal belonging to the Miocene series. This mineral has acquired a certain commercial importance within the last few decades, and has been extensively worked, though the proximity of Cologne to the Westphalian and other coalfields makes it easy to obtain any quantity of true coal.

The Cologne lignite has been worked on the left bank of the Rhine to the extent of 13 million tons per annum, this being the figure attained in 1910. There is a similar deposit on the opposite bank which has not as yet been worked. The left-bank deposit can therefore be regarded as 'actual reserves', and is estimated to contain 3,800 million metric tons; the right-bank deposit, which is explored but not yet mined, is estimated at 3,525 million tons.

It may be desirable to add a few observations on the uses of brown coal. Its heating power is reckoned at one-third that of medium-quality pit-coal, and in the form of compressed blocks or briquettes it can advantageously be used in many industries, especially sugar and chemical works and potteries, with specially built or adapted furnaces; it also affords a useful substitute for steam-coal, and can be used for domestic heating.

Its great advantage is its cheapness. It is obtained by the very simplest surface-mining methods, from large and continuous deposits of fairly uniform quality, and since the introduction of presses can be transported cheaply in a compressed form by means of a network of light railways and wire-rope funiculars. Extraction, treatment, and transport are so cheap that the lignite, which at the workings costs only about 2*s.* per ton, can be brought to the furnaces at factories in the Cologne district with little increase from this extremely low figure. Nor is the price likely to rise greatly, because there is no danger of exhausting the deposit for some centuries at the present rate, and extraction is likely to become cheaper rather than more expensive. The only factor which might send the price up would be a very greatly increased demand.

The left-bank deposit has its centre at Brühl, on the slopes of the Vorgebirge, and reaches northwards to within 3 or 4 miles of Cologne. The lignite has been worked in small quantities ever since the middle of the sixteenth century, but the workings only obtained commercial importance late in the nineteenth century when presses were introduced to convert it into an easily transportable form, when the rise in the price of pit-coal gave a new impetus to the use of substitutes, and when the means of transport in the neighbourhood of the deposits underwent a considerable development. As a result of all this the lignite area has been for the last twenty years becoming more and more industrial; new factories have sprung up all over it, often immediately connected with the lignite mines by their own funicular or light railways.

The deposit of lignite on the western bank of the Rhine is 50–350 ft. thick, and lies on average 30–50 ft. below the present surface. The deposits to which it belongs contain also valuable clays (for pottery), as well as shale coal, formerly worked for mineral oil and paraffin, alum clay, and clay iron-ore, which are not now worked. The produce of the workings is partly consumed on the spot in the raw state, but for the most part it is compressed into large and small briquettes for factory and domestic use, and burnt within a radius of about 25 miles from the mines. Beyond this distance the cost of freightage puts lignite at a disadvantage as against the less bulky mineral coal; but a quantity is exported, chiefly in the form of small briquettes, to Holland, Switzerland, and other countries.

D. The Coal Resources of Holland

The whole of Holland apparently falls within the great Anglo-German coal basin; and it is therefore probable that the coalfields are coextensive with Holland itself. But they lie for the most part at such a depth that their greater portions can probably never be worked or even located. We are concerned with the southernmost portion of Holland only, and it is here that the exploration of the coal-measures has been most successfully undertaken.

The Anglo-German coalfield in the Lower Meuse plain is not only overlaid with a considerable thickness of Tertiary and Quaternary strata, but is intersected by an elaborate system of faults, the chief of which radiate north and north-westwards from the neighbourhood of Bonn. These, in combination with another series running about east and west, cut up the coalfield into a number of blocks lying at different levels, some subsiding and others standing high above their neighbours in the form of 'horsts'. The higher horsts bring the coal-measures within a reasonable distance of the modern surface; and consequently the coal is workable in such localities. On the other hand, some horsts have been left standing at such a height that erosion has entirely removed the coal-bearing series. This has occurred near Venlo and Maastricht.

The series of coal-bearing strata is as follows:

A. Upper zone: sandstones, &c., with highly bituminous coal.

1. A few seams of highly bituminous coal (long-flame).
2. A well-developed group with many seams of long-flame coals of considerable thickness: 1,000 ft.
3. Barren, with a few intermittent seams.

B. Middle zone: shales with a close sequence of thick coal-seams.

4. Seams of bituminous gas coals: 1,000 ft.
5. Barren: 300 ft.
6. Close sequence of thick seams of bituminous coals: 2,000 ft.
7. A poor zone, with good seams in South Limburg: 350 ft.
8. Two very persistent thick seams: 65–80 ft.

C. Lower zone: grits and conglomerates, with few seams of coal.

9. Barren; one seam occasionally workable: 500 ft.
10. 3 or 4 seams of steam-coals: 100 ft.
11. Barren: 900 ft.
12. Thin anthracite beds and underclays: 160 ft.
13. Large barren zone, little explored.

The following coalfields have so far been proved in the part of Holland under consideration:

(*a*) *South Limburg.*—Proved to be workable over an area of 47,000 acres in the region of Kerkrade, Heerlen, Schinnen, Geleen, and Sittard. Sixteen thousand more acres east and south-east of Maastricht may contain workable seams.

(*b*) *South Peel District.*—A horst 4–6 miles wide lies astride the Meuse and the German frontier between Roermond and Venlo, and extending altogether about 37 miles from north-west to south-east. The northern half of this horst forms the Southern Peel coalfield. It covers about 40,000 acres of workable coal-measures, while another 25,000 may be found serviceable, though containing inferior seams or lying at a greater depth.

(*c*) *North Peel District.*—A horst is known to exist about the villages of Oploo and Mill in the north of the Peel. It is not yet known whether the coal would repay working.

a. The South Limburg Coalfield

This field is the direct eastward continuation of the Campine coalfield of Belgium, and is continued to the east by the German field of the Wurm basin north of Aachen. The whole region, in contradistinction from the Campine field, is strongly disturbed by faults which divide it into horsts and down-thrown blocks. In general the faults throw down to the east, and the coal-measures accordingly sink out of reach in the neighbourhood of Düren and Jülich in Germany. Northward also the tendency is to drop, so that the coal-measures, which come to the surface at Kerkrade, lie at Sittard under 1,600 ft. of Cretaceous and Tertiary formations. Here the bordering faults throw the coal-measures abruptly down to a depth of 6,500 ft. or more. The overlying Tertiaries contain much water, quicksands, &c., which necessitate special processes. Sixty thousand acres are reserved by the Government for State mines.

The 'actual reserve' of coal in this field, to a depth of 4,000 ft., consisting of dry and semi-bituminous coals, is estimated at 209 million metric tons. The 'probable' and 'possible' reserves to the same depth add 579 and 953 million tons respectively. The total reserve of South Limburg coal to this depth is therefore 1,741 million metric tons.

b. The South Peel Coalfield

Connected with the great Sittard fault, and radiating from the same centre near Bonn, is another fault running down the eastern bank of the Roer and across the Meuse towards Helmond. This terminates the depressed area above mentioned and marks the edge of of the S. Peel horst. Here the coal-measures are about 900 ft. below the surface. They have, however, not been long discovered, and no mines have been opened. Reserves must therefore be classified as 'probable' and 'possible'. Down to 4,000 ft. the probable reserve is estimated at 924 million metric tons, and the possible at 288. Total, 1,212 million metric tons.

[1] *PART II. IRON-ORE*

INTRODUCTION

The iron-ore resources of our area are even more remarkable than its coal resources. They are not widely distributed, like the deposits of coal; they are, in fact, confined to one small district, which is in consequence one of the most valuable in the world. The district in question is situated on the borders of French and German Lorraine, Belgium, and Luxemburg, and is known as the *minette* field, from the trade name of the ore which it contains. This field, over half of which lies in France and most of the remainder in Germany, produces annually 48 million tons of ore, or three times as much as the United Kingdom, and supplies with three-quarters of its raw material the whole gigantic steel industry of Belgium and western Germany. It has influenced history in the past, namely in 1871, when Germany drew her new frontier so as to include those portions of it then known to exist on the Briey plateau, and it will be an important factor in the readjustment of frontiers and tariffs at the end of the war.

Beside the *minette* field our area contains numerous minor deposits of iron ore. These may be summed up as follows: (*a*) the trough of the Sambre–Meuse coalfield in the neighbourhood of Namur is lined, as it were, with an iron-ore stratum appearing at the surface north and south of the coal-measures and underlying their centre. This has not been worked since 1873, and it is doubtful whether workings will ever be reopened. (*b*) There is a very large number of small deposits, mostly in fissure-veins, in central Belgium and up and down the Eifel. These, too, are at present unworked. (*c*) In the Campine district of north-eastern Belgium and in Belgian Luxembourg are large deposits of bog-ore, which are worked to a certain extent and might be exploited on a larger scale.

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[1] Atlas, Maps 6, 7.

These minor deposits are in no case of great moment, and whatever value they possess in themselves is completely overshadowed by that of the *minette* field.

A. The Minette Field

By far the most important iron-ore deposit in our area is the *minette* field, lying on the plateau between Verdun, Metz, and Luxemburg.[1] This field is, indeed, the most important ironfield on the Continent, and has been described as the most important in the world. It is at any rate of overwhelming importance as regards the countries in and near which it lies.

Thus France produced annually, just before the war, about 21·7 million tons (metric) of iron-ore, a figure which had been increasing with great rapidity for some 20 years. Of this 19·8 million tons came from Meurthe-et-Moselle, i. e. from the great *minette* field and its southern extension at Nancy, the latter accounting for about 2 millions. The whole of the rest of France therefore produces only 1·9 million tons of ore. Very nearly 90 per cent. of the total French output thus comes from the *minette* field; and the French output of *minette* already exceeds the whole British production of iron-ore by 3·8 million tons per annum.

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[1] For its general position see Atlas, Map 6; for details, Map 7.

Germany, again, is a country poor in iron ore. Her total output in 1913 was 28·6 million tons; but of this 21·1 came from the *minette* field, the whole of the rest of Germany producing 7·5 million. During the war 80 per cent. of the iron-ore treated in Germany is said to have been *minette* from German (including Luxembourgeois) or occupied French territory.

Luxemburg is an important producer of pig-iron, and the ore treated in her blast-furnaces, which furnish raw material to Belgian and north-western German steel-works, comes entirely from the *minette* field. The Luxemburg portion of that field produces 7·3 million tons of ore per annum.

The total annual production of the *minette* field is thus 48·2 million tons of ore, or three times the total British output of 16 millions, and nearly three-quarters of the United States total of 62 millions. The *minette* field supplies with three-quarters of its raw material an immense steel-working district whose corners lie at Charleroi, Dortmund, and Nancy. This district absorbs about 60 million tons of ore annually, made up of 45 million tons of *minette* plus about 15 million tons of Swedish ore; and produces annually 25 million tons of steel, or two-thirds of the output of the United States. The great steel industry of Belgium and western Germany thus depends for its existence very largely on the *minette* field.

The field covers in all an area of 463 square miles, of which 282 lie in France, 166 in Germany, 14 in Luxemburg, and a trifle over 1 in Belgium. Its total length from N. to S. is about 60 miles, and its greatest breadth about 20. On the north and east the ore comes to the surface and is worked in levels and surface-workings; westward it dips under the ground at increasing depths, the westward limit of mining being dictated partly by the thickness of the formations overlying the iron-ore and partly by the varying richness of the ore itself. It appears, however, that the limits of the field in this direction, as laid down in the maps of the accompanying atlas, do not admit of extension in the present state of the iron trade; for though soundings have revealed the existence of the ore stratum at Etain and Verdun (at the latter place 1,900 ft. below the surface) no concessions have been taken up west of the limit shown on the map. It is of course possible that future alterations in the price of iron might make it profitable to extend operations beyond this line; but for the present the area of 463 square miles may be taken as covering the whole deposit of workable ore.

The ore known as *minette* occurs in the so-called Dogger beds of the Jurassic oolite (limestone). It is a hydrated hematite of oolitic structure, composed, that is to say, of small grains, sometimes microscopic, sometimes as large as a pin's head or larger, and embedded in a paste which is sometimes argillaceous (clayey) and sometimes calcareous, i. e. containing a high percentage of lime. A high percentage of phosphorus (1·7–1·9 per cent.) is the chief chemical characteristic of the ore; the influence of this fact on the history of the *minette* field is explained below.

The total thickness of the ore is 80–130 ft. Within this deposit a series of seven strata is distinguished, divided into three groups.

Upper series	Ferruginous limestone.
	Red stratum.
Middle series	Yellow stratum.
	Grey stratum.
Lower series	Brown stratum.
	Black stratum.
	Green stratum.

Of these strata some are calcareous and some argillaceous, but the same stratum does not preserve the same character throughout the field. On the whole, argillaceous ores are commoner; calcareous ores are found mostly in the Briey basin, in the French section of the field, and also in Luxemburg, but comparatively little in the German section or the Longwy basin.

The relation between these two main types of ore is important from the point of view of metallurgy. A calcareous ore is self-fluxing; i. e. the lime unites with the slag to form a mixture which melts at the temperature of the blast-furnace and can be run off in liquid form. An argillaceous slag will not melt unless lime is added to it in the furnace. This lime is known as a 'flux'. It may take the form of ordinary limestone, or else of a calcareous ore; the latter is of course greatly preferable, as it yields iron as well as serving to flux the slag of the other ore. Blast-furnaces which smelt argillaceous ores therefore find it profitable to mix calcareous ores with them in such a proportion as to produce a 'self-fluxing mixture'. The German *minette* blast-furnaces obtain their fluxes chiefly in the form of calcareous ores from French mines in the Briey basin. In most cases they have actually purchased these mines for the express purpose of securing the best self-fluxing mixture; and this gives rise to various political problems in connexion with the *minette* field.

The percentage of iron in the *minette* ores is low, seldom much above 40 per cent. and averaging perhaps 37 per cent. This is not a high percentage for an iron-ore; the extremely profitable nature of the *minette* workings is due to other factors. The ores exist in great quantities and in continuous deposits; extraction is cheap and easy; the juxtaposition of different ores makes it everywhere easy to obtain a self-fluxing mixture; the ores are soft and easily reducible; and the percentage of phosphorus renders the pig-iron which they yield highly suitable for treatment by the basic process. These advantages more than compensate for the comparatively low percentage of iron.

The development of the *minette* field is quite modern and depends on a technical advance in metallurgy known as the basic (or Thomas-Gilchrist) process. Lorraine has produced iron for centuries; but the older workings were confined to superficial deposits of non-phosphoric iron, locally known as *fer fort*. *Minette* was a term of contempt applied to the phosphoric ores from which wrought iron could not be successfully produced because the phosphorus made it brittle. The same disadvantage attached, after the introduction of the Bessemer process, to mild steel made from phosphoric ores. These ores were known to exist in a line running east from Longwy to Esch-sur-Alzette in Luxemburg and beyond, then turning south past Kanfen and running up the Moselle valley west of Thionville and Metz; this line represented the outcrop of the Dogger formation.

The Franco-German war resulted in the cession of this line in great part to Germany. France retained the Longwy section and the southern end of the line where, after an interruption about Pont-à-Mousson, it reappeared for a time in the neighbourhood of Nancy; but the whole central portion, together with a 'hinterland' extending westward over the Briey plateau and designed to include possibly valuable subterranean portions of the ore deposit, was annexed by Germany. It seems to be beyond doubt that the exact line of the 1871 frontier west and north of Metz was decided primarily by geological considerations; this part of the frontier has no strategic, linguistic, ethnological, or political merits.

For the first few years after the treaty of Frankfurt the development of the Lorraine ironfield went on slowly, the Germans exploiting the eleven mines in the annexed area and the French developing those parts of the outcrop, at Longwy in the north and from Pompey past Nancy to Pont-St. Vincent in the south, which remained in their hands. About 1880, however, the discovery of the basic process revolutionized the position of the *minette* ore. The same problem (an excess of phosphorus in the ore) had arisen in the Cleveland mines, which are geologically and chemically analogous to the *minette*; here it was solved in 1878 by the addition of lime to the lining of the Bessemer converter in which cast-iron was rendered malleable by the burning-out of the carbon, sufficient carbon to harden it into steel being added later on. By this addition the superfluous phosphorus was removed as well; and thus ores with a high percentage of phosphorus could for the first time be used to make good steel.

This discovery gave a new impetus to the Lorraine iron-mines, where hitherto only the small deposits of *fer fort* had been of value in the production alike of wrought iron and of mild steel. A series of researches was undertaken in order to discover the full extent of the field; and this systematic exploration led to discoveries hardly less important in their effects than that of the basic process itself. It was found that the *minette* field, instead of being confined to the outcrop on the north and east and perhaps to a narrow strip of ground adjoining it, extended 15 or 20 miles westward from this line at accessible depths, its practical western limit fluctuating about a line joining Longwy and Conflans. West of this the increasing depth, or the diminution in quantity or value of the ore, or both, limited the area of profitable mining, though the stratum of ore was found to extend much further west.

The new French field, so limited, began to develop in the early 90's. In 1893 the first mines in the Briey district began work, and the Briey basin has been steadily and rapidly developing and increasing its output ever since. In 1911 it already produced more than one-tenth of the world's total output, and its production was increasing yearly by about 1 to 2 million tons. The rapid development of iron-mines led to an equivalent increase in the population and a complete change in the character of a hitherto agricultural district.

The other portions of the field were also developing, though naturally with less rapidity. In the German district there were by 1914 twenty-four levels and nine shaft-mines, as against the eleven levels of 1871; the surface-workings and levels of the Luxemburg area multiplied in about the same proportion, and the little Belgian area was worked till it was practically exhausted.

The future development of the *minette* field lies chiefly in the Briey basin. The more superficial deposits of Germany will certainly be exhausted before those of France; the Luxemburg field has already lost two-fifths of its whole deposit. The reserves of ore estimated as 'actual', i. e. remunerative in the present state of the steel industry, are as follows:

France (including Nancy) .	3,000	million metric tons.
Germany	1,830	,, ,,
Luxemburg	270	,, ,,
Total . . .	5,100	,, ,,

To this may be added certain 'potential' reserves, i. e. deposits which might under different conditions be profitable:

France . . .	200	million metric tons.
Germany . . .	500	,, ,,
Total . .	700	,, ,,
'Actual' reserves .	5,100	,, ,,
Grand total .	5,800	,, ,,

These estimates do not include the possible westward extension, in different conditions, of the mining area.

It is clear that the *minette* field has ever since 1871 exercised an influence on the political relations between France and Germany. On the one hand, Germany, having in 1871 annexed all the *minette* then available, has derived immense advantages during the course of the war from holding the Briey plateau, and on the other, the recovery by France of the whole *minette* field would reduce Germany's reserves of iron ore by 75 per cent. A suggestion has appeared in the press from time to time that the *minette* field, or some part of it, should be internationalized like the zinc-mine of Moresnet on the Belgo-German frontier near Aachen.

a. The Minette Field in France

France possesses 282 square miles of the *minette* field, or 61 per cent. of the whole. Of this share about a quarter (69·5 square miles) consists of the Nancy field; the remaining three-quarters (212·4 square miles) lie in the great northern *minette* field and are composed of the basins of Longwy, Crusne, and Briey. The general character and history of these basins have been described in the preceding section. It remains here only to describe them in detail.

The estimated reserves of these French basins are given in the following table. The reserves are 'actual', i. e. profitable for mining in the present state of the iron industry. The annual output of the entire French field is, according to the 1913 figures, 19·8 million metric tons, but it must be borne in mind: (1) that the Briey basin has been steadily increasing its production, at the rate of 1–2 million tons annually, for several years; (2) that the recently discovered Crusne basin may be expected shortly to begin producing; (3) that the

Longwy basin is becoming less important both relatively and absolutely as its ferruginous limestones are superseded for use as fluxes by the calcareous ores of Briey.

Basin.	*Reserves.*
Longwy	300 million metric tons.
Crusne	500 ,, ,,
Briey	2,000 ,, ,,
Total of northern field .	2,800 ,, ,,
Nancy	200 ,, ,,
Grand Total . . .	3,000 ,, ,,

Two problems must be noted in connexion with the French *minette* field, though these cannot be fully treated here. They are (i) the problem of coal-supply, (ii) the problem of German mine-owning.

(i) The absence of a good and accessible coal-supply is the chief drawback to the development of the French *minette* field. Both for working the mines and equally for the blast-furnaces and steel-works which would naturally exist in their neighbourhood a large supply of coal is indispensable. This is not to be had. The possible sources are Valenciennes, Belgium, Westphalia, and Saarbrücken. Of these the first only can send coal duty free, and the cost of freight is too great to supply fuel at reasonable prices. Saarbrücken, the natural source of supply for all Lorraine, is practically removed from the list by the deliberate restriction of its output (see p. 376), and by the fact that the canal, projected before 1870 to connect the Saar and Moselle valleys and under the terms of the Treaty of Frankfurt to be completed by Germany, has never been made. It has apparently been an article of German policy to prevent Saar coal from reaching French Lorraine. Actually French iron-masters get their coal partly from Valenciennes and partly from Belgium and Westphalia, where, in order to ensure a steady supply, they have invested about 100 million francs in the purchase of collieries. This, however, does not supply them with more than a part of the coal which they at present consume, and the balance is made up by purchase from the same source.

There is thus a permanent scarcity of coal in the French *minette* field. This does not appear to have checked mining to any great extent, but it certainly has checked the building of blast-furnaces and steel-works, which only exist in the extreme north about Longwy and in the extreme south about Dieulouard, Pompey, and Nancy, beside a small group near Briey. Even those which exist are unable, owing to the price of coal and coke, to compete with Belgian, Luxembourgeois and German establishments; and the result is that, broadly speaking, France tends to export instead of smelting her ore.

(ii) The natural market for this surplus ore is in Germany and Belgium, where ore is in demand and coal is cheap. The tendency of France to export her ore, especially to Germany, which takes 40 per cent. of her total export, is confirmed by the acquisition of French mines by German owners in return for the acquisition of German collieries by French iron-masters. The French *minette* field is therefore scattered with concessions to German iron-masters, who use the Briey calcareous ores to give a self-fluxing mixture with the German argillaceous ores. This fact would have obvious effects upon any settlement of the frontier or of international trade-relations after the war. There is, in fact, a great deal of exchange between France, Germany, Belgium, and Luxemburg, of which this dispatch of French ore from German-owned mines is only a part. In order to ensure the best possible mixture of ores in the furnace a regular system of such exchanges has arisen. Thus, in addition to the 4 million tons of ore which go annually from France to Germany, 0·8 million go from Germany to France, 2·9 from France to Luxemburg, and 1·6 from Luxemburg to Belgium. Belgian and Luxembourgeois iron-masters, as well as German, buy mines across the frontier and send the ore to their own furnaces. The international relations of the *minette* field are thus highly complicated.

1. *The Nancy Basin.*

This, the isolated southern extension of the field, has an area of nearly 70 square miles. The Dogger formation here crops out along the sides of the Moselle and Meurthe valleys and those of their tributaries, and sinks to the west under the forest of the Haye region. In the extreme south an isolated portion of the bed is found upon the hill of Sion. The division into strata is simpler than is the case further north. The three main strata, upper, middle and lower, are alone distinguished; they are worked by means of levels. The proportion of iron is 32–37 per cent., a low figure compared with the percentages of 35–42 found in the northern field; the ore is for the most part strongly argillaceous, but some strata are here and there calcareous, as for instance the lowest stratum at Liverdun.

The average production of the Nancy basin is between 1·5 and 2 million tons per annum; the most important mine is Maron-Val-de-Fer, producing about 600,000 tons annually. The total reserves are estimated at 200 million tons of ore; this includes those portions of the field, underlying the Haye forest, which have not yet been conceded.

2. *The Northern Field*

(*Basins of Briey, Crusne, and Longwy*)

Briey Basin.—This southernmost section of the northern field is divided into the Orne, Landres, and Tucquegnieux basins. The Orne basin underlies the Orne valley and terminates eastward in a series of rich outcrops along the Moselle valley in German Lorraine. Westward it extends as far as Brainville. West of this and south of Bruville the ore stratum gets thinner (under 8 ft.) and the yield of iron unprofitably low. In the southern part of the basin, south of the Orne fault, the grey stratum is 13–15 ft. thick and the percentage of iron is rarely below 36, often 38 or 39. North of the fault the grey stratum varies between 8 and 11 ft. thick, with 36–40 per cent. of iron. Near Hatrize the ore gets poorer, and it is progressively so westward to the edge of the field. Northward from Hatrize lies a somewhat richer deposit, near Genaville. All these ores are calcareous. The grey stratum is throughout the best and easiest to work ; but others exist. At Homécourt and Moutiers a green stratum exists with a thickness of 7–14 ft. and 32 per cent. of iron. At Giraumont the black stratum is 9 ft. thick and yields 40 per cent. of iron. The yellow stratum bears 35 per cent. of iron and is found at Moutiers, Valleroy, and Bellevue. These are all as a rule argillaceous. The red stratum is workable at Jœuf (8 ft. thick, 38 per cent. iron), Homécourt (10 ft., 37 per cent. iron), and Moutiers (5–11 ft., 37 per cent. iron), and is calcareous.

The deepest shaft at present existing is at Auboué (413 ft.). Elsewhere shafts do not go below 330 ft. Deep workings are a good deal hampered by water.

The basin of Landres lies north-north-west from that of the Orne valley, from which it is separated by a tract of barren ground about Ozerailles. It is bounded on the east by the fault of Norroy and Bonvillers, which separate it from the Tucquegnieux basin (see below). The only workable stratum is the grey, which varies in thickness between 23 and 30 ft. In the extreme west about Dommary it diminishes to 10–13 ft. thick, and the percentage of iron decreases; the same conditions limit the extent of the workable deposit on the south. On the north the proportion of iron decreases, but the thickness remains considerable. The average percentage of iron over the basin as a whole is 38–40.

The basin of Tucquegnieux adjoins the two basins already described, and runs eastward thence across the German frontier. The grey stratum here takes the form of a synclinal trough running down to south-south-west. In its northern part, at Anderny and Bazonville, the stratum is 6–16 ft. thick, with 36–40 per cent. iron. Further south, where the stratum lies at a greater depth, as at Tucquegnieux, the thickness is 20–23 ft. with about 36 per cent. iron; at Mairy and Mainville 20 ft. with 39–41 per cent. South of this again, near Anoux, the stratum suddenly diminishes to about 4–5 ft. and becomes unworkable. In the south-east, at Avril and Saint-Pierremont, it is 13 ft. thick and contains 36–38 per cent. iron. Other strata exist here and there, being mostly argillaceous. At Bazonville the black is 10–11½ ft. thick with 41 per cent. iron. The red appears in several places, e. g. at Murville, 19 ft. thick with an average iron percentage of only 28; but in the south (Anoux, Saint-Pierremont), where it is 5½–9 ft. thick, the percentage of iron is 33–37.

To this basin belongs a strip of country limited by parallel faults and lying between the Crusne river and Audun-le-Roman; the grey stratum is here thin and poor in French territory, but over the frontier at Aumetz it is a valuable deposit.

These three basins (Orne, Landres, Tucquegnieux) together make up the basin of Briey. Its general characteristic is the predominant importance of the grey calcareous stratum, with occasional valuable deposits of other kinds. The reserves of the whole basin in French territory are calculated at 2,000 million metric tons of ore, all suitable for treatment by the Thomas-Gilchrist process.

Longwy Basin.—The basin of Longwy occupies the northernmost position of the *minette* field, being situated on the frontiers of France, Belgium, Luxemburg, and Germany. It is intersected by two faults, at Longlaville (north of Longwy) and Hussigny respectively. In the region lying between these faults three strata are workable. The red, with the ferruginous limestone, is 26 ft. thick at Saulnes; the yellow, 13 ft. lower, is 8 ft. thick, and is separated by 1½ ft. of barren from the grey. All these are strongly argillaceous except the ferruginous limestone. This carries 20–28 per cent. of iron; the other strata 35–40 per cent.

West of the Longlaville fault the grey alone is found. It is 6–10 ft. thick, and the ore, which is strongly argillaceous, contains 35–41 per cent. of iron. East of the Hussigny–Godbrange fault, and extending thence to the Crusne valley, the red stratum occurs, diminishing from 16 ft. at Hussigny to 10 at Villerupt (38 per cent. iron); the grey at the same sites yield 40 per cent. iron; the black is workable at Hussigny, 8 ft. thick with 41 per cent. All these are strongly argillaceous. They are worked in open-air quarries, Hussigny being the chief centre of this type of working, and also in levels. The total production of the Longwy basin, 1904–8, was as follows:

	Surface workings.	*All workings.*
1904 . .	418,000 metric tons.	2,593,000 metric tons.
1905 . .	345,000 ,,	2,333,000 ,,
1906 . .	360,000 ,,	2,602,000 ,,
1907 . .	499,000 ,,	2,713,000 ,,
1908 . .	397,000 ,,	2,280,000 ,,

The fall of production in 1908 was due to the replacement of the ferruginous limestones of the Longwy basin, for metallurgical purposes, by the richer calcareous ores of Briey, which owing to their higher percentage of iron are more economical when mixed with the argillaceous ores to make a self-fluxing mixture.

Crusne Basin.—The basin of the Crusne between the Longwy and Tucquegnieux basins is of recent discovery and not yet fully explored. It is, however, known that the grey stratum is 10–18 ft. thick and contains 34–39 per cent. of iron and is argillaceous, containing the very high figure of 20 per cent. or more of silica. This deposit extends from Mercy-le-bas to Morfontaine, and requires shafts 300–500 ft. deep for working. Other strata are also present. The deposit resembles in character those of the Longwy basin, and probably contains 500 million metric tons of ore.

b. The Minette Field in Germany

The German *minette* field is contiguous with the French and Luxemburg fields, and lies on the left bank of the Moselle. It begins in the north at the Luxemburg frontier between Audun-le-Tiche (Deutsch-Oth) and Kanfen, and runs thence southward to the neighbourhood of Metz. Its total area is 166 square miles, or about 36 per cent. of the whole *minette* field. That a larger proportion of the field was not annexed in 1871 was due to the fact that the westward continuation of the deposit was then unknown. The frontier of 1871 was designed to include in Germany the whole of the French *minette* field except the Longwy and Nancy basins.

The general character of the deposits closely resembles those of French Lorraine. The same series of seven strata is observed; and of these the grey is usually calcareous and self-fluxing, while the lower strata are argillaceous. In the north the red stratum yields a good argillaceous ore (40 per cent. iron). The other strata are for the most part less rich. Extraction is, however, cheap, the ore here lying nearer the surface than in most of the French area ; it is in many places worked in open-air surface workings, and electric power derived from the waste gases of blast-furnaces contribute to the cheapness of the work.

The field is divided by the valleys of the Fensch and Orne into three main sections, north, central, and south. The northern is considerably the most important. The reserves of ore are estimated as follows :

1. Plateau of Aumetz (north) .	1,125	million metric tons.
2. Between Fensch and Orne (central) . . .	383·5	,, ,,
3. South of the Orne (south) .	321·5	,, ,,
Total . . .	1,830	,, ,,

It has already been observed that annexed Lorraine is of capital importance for the German steel industry. Its annual output of 21·1 million metric tons amounts to three-quarters of Germany's total output (28·6 million) and two-fifths of her total consumption (50 millions). In addition to her own *minette*, Germany takes up about 4 million tons of French ore and a considerable proportion of the Luxemburg ore. This ore is mostly smelted in the Thionville area, in the blast-furnaces of the Moselle, Fensch, and Orne valleys, which consume over half of it ; the rest is equally distributed between the Saar valley, where there is a group of old-established iron and steel-works, Westphalia (which depends on the *minette* field for over half its iron), and Luxemburg; while small quantities are exported to Belgium and France (1·7 and 0·8 million tons respectively). In general, Germany does not export either much iron-ore or (except to Belgium) much pig; but she imports annually 14 million tons of ore, excluding what she gets from Luxemburg. This importation of ore, together with the produce of the annexed Lorraine *minette* field, amounts to 70 per cent. of Germany's normal consumption.

Germany's chief foreign ore supplies are: (1) Sweden, 4·5 million tons; (2) France, 4 million tons; and (3) Spain, 3·6 million tons.

c. *The Minette Field in Luxemburg*

In the extreme south of Luxemburg the iron-bearing Dogger formations occur overlying the marl of the upper Lias. They are a simple continuation of the Franco-German *minette* field. The Dogger plateau is here cut into by a series of streams, viz. the Dudelange stream, the Kayl, and the Alzette, which divide it into three sections. The iron-ore crops out on the banks of each of these streams and underlies the intervening hills. The whole Luxemburg *minette* field thus consists of—

1. The Differdange–Rodange field.
2. The Esch–Rumelange field.
3. The Rumelange–Dudelange field.

In the first field (1) the total thickness of the deposit is 84 ft., the ore being mostly argillaceous and occurring in five strata.

In the second field (2), at the site known as *in der Höhl*, the deposit reaches its greatest thickness of 168 ft. Here are five well-marked strata. The two lowest are argillaceous, the remainder calcareous and reddish in colour. Towards the east and south-east the thickness and richness of the deposit rapidly decline. Between Esch and Schifflingen only the grey (argillaceous) and red (calcareous) are worth working. At

Rumelange the deposit is 123½ ft. thick and contains three strata, of which two, the yellow and the grey, are worked. The red is present, but is only worked at a few isolated points. All are calcareous.

In the third field (3) at Dudelange the deposit is only 75½ ft. thick. The yellow, subdivided by a stratum of marl 8 ft. thick, is the best stratum. The grey is present but is not worked. Both are calcareous.

The total area is 14 square miles, of which 5·4 have been completely worked out. The remaining 8·6 square miles are estimated to contain 270 million metric tons of ore.

Luxemburg smelts most of her own ore, apart from a certain quantity (about one-fifth) which she sends to Belgium. The Luxemburg blast-furnaces produce large quantities of pig, which is mostly sent to the Aachen district of Germany for remelting.

d. The Minette Field in Belgium

North of the Longwy basin a small portion of the *minette* field projects across the Belgian frontier in the neighbourhood of Musson and Halanzy. The ore here is at the surface, this being the westernmost portion of the northern outcrop of the Dogger formation. It has been actively worked in the past, and has given rise to a group of blast-furnaces and steel-works at Musson, Halanzy, and Athus. The total area of this ironfield within the Belgian frontier, however, is only 300 hectares (about 1⅙ square mile), and in consequence the deposits have been almost entirely exhausted by now, and cannot be reckoned upon as a future source of ore. The ironworks of this district obtain their ore from across the frontier.

B. IRON-ORES OTHER THAN *MINETTE*

These ores are in no case of any great commercial importance at the present moment. The oolite ores of Belgium form a large deposit which has been a good deal worked in the past, but is now neglected; in the same way the very numerous minor deposits of ore in veins in Belgium and the Eifel have been the seats of important iron industries which are now entirely extinct. Some ore could no doubt be obtained at many, if not all, of these sites; but it would not at present compete with *minette.* Only a real scarcity of ore could provoke the general reopening of these mines. They are, in the case of Belgium, fully described in various publications; the German mines have not received the same attention as ore-reserves, though their history is well known. Finally, the large and fast-renewed deposits of bog-ore in the Belgian Campine district have a certain commercial value which may increase in the future.

a. Belgium: Iron-ores other than Minette

These deposits have in the past had a considerable commercial value. Between 1854 and 1873, before the *minette* ores could be used, Belgium took an important place as a producer of iron-ore. In the latter year, thanks to an industrial crisis, the total yield of Belgian ore fell from 778,000 metric tons to 200,000, and no considerable rise has ever taken place since then, the great Belgian steel industry depending now almost entirely on foreign ore.

After 1873 a very large number of old workings was abandoned. These must be considered, with a view to possible reopening, in a review of the resources of the country; but an estimate of their potential yield under modern conditions is necessarily rough. Their sites were often ill chosen and their methods of working already antiquated and unduly expensive, the exploitation being undertaken by small iron-masters whose theoretical knowledge was as deficient as their capital. Steam-engines were either absent or under-powered; the lack of pumping machinery often led to the abandonment of workings at a point where the ore was becoming free from surface impurities; and good ores were often left untouched because, owing to their hardness, they could not be extracted without blasting. From such conditions it followed that the old workings were superficial and unproductive, and destroyed a considerable area of agricultural land without giving a really adequate return. These defects, already noticed by acute observers in 1856, were in great part responsible for the collapse of iron-mining in Belgium after 1873.

There are three types of deposit: sedimentary ores, fissure veins, and recent surface formations (bog-ore).

1. *Sedimentary Formations*

These include by far the largest quantity of iron-ore. There are three groups:

(i) *Givetian oligist* (*middle Devonian oolite*).—This is a stratum occurring in connexion with the Givet limestones. It consists of a very coarse oolite, the elements of which are embedded in a ferruginous paste containing perhaps 29 per cent. of iron. Little is known in detail of its extent; but it appears at a considerable number of places in the Namur and Liége provinces south of the Sambre–Meuse valley.

(ii) *Famenian oligist* (*upper Devonian oolite*).—This is the most important iron-ore deposit of Belgium. It forms a great trough or synclinal which encloses the Namur–Liége coalfield, and the northern and southern lines along which it crops out can be traced for a distance of about 60 miles by two parallel series of old workings, one on each side of the Sambre–Meuse valley. Deep workings, at a greater depth as they approach the bottom of the trough, could of course be made between these lines.

The content of the ore varies from 52 per cent. to 29 per cent. of iron. It contains manganese almost everywhere, and phosphorus up to 0·5 per cent. The stratum of ore is generally about 4 ft. thick.

(iii) *Lithoid carbonate of iron.*—This occurs in certain collieries of the Liége district, but is not worth working for its own sake.

2. *Fissure Veins*

These occur principally in Carboniferous and Devonian rocks. The ore which they contain is in general limonite; hematite and siderite are rare. The average yield is 45 per cent. of iron. These ores contain little phosphorus but a certain percentage of sulphur. In certain districts (e. g. on the banks of the Meuse and in the east of the Liége province) these veins are so rich in zinc and lead as to have been worked primarily for those metals (see pp. 413–16).

Fissure-vein mines have been worked in great numbers in middle and upper Belgium. In the province of Namur alone there are several hundred sites. Various workings however could, according to a recent authority, be profitably reopened. Such are a group of important veins about Ligny and Tongrinne (lower Carboniferous series); another 2 miles further south, about Fleurus and Verlaine (upper Carboniferous series); and a third at Rhisnes. The veins of

Vedrin, Bonnine-Gelbresée, Champion, Beez, Namèches, Fraire, and Morialmé in Namur, that of Theux in Liége, and those of the Ourthe valley, should also be noted as possible sources.

3. *Recent Surface Formations* (*Bog-ore*)

The so-called 'Campine', the marshy plain of Antwerp and Limbourg provinces, is formed of Quaternary sands, some of which contain ferruginous elements. These by their decomposition give rise to the bog-ore deposits known as Campine ore or *minerai des prairies.* It is a light porous formation which may attain a thickness of over 3 ft.; the minimum thickness usually worked is 1 ft. 4 in., or a deposit of 2,400–3,200 metric tons per acre. It contains on average 30 to 35 per cent. of iron, sometimes rising to 50 per cent., and 1–2 per cent. of manganese. The ore forms with great rapidity. Twenty years is usually considered long enough for the formation of a stratum 1 ft. to 1 ft. 4 in. thick; and certain localities have been completely worked out three times between 1846 and the present day. The same formation occurs here and there in the Luxembourg province, where also it is worked.

A certain development of this form of mining occurred in the early years of the present century, the ore being exported chiefly to Germany. It is valuable for certain special purposes on account of its high percentage of phosphorus; but so far there has been no steady demand on any large scale. Should such a demand arise the ore could be obtained in considerable quantities.

The following table gives the total output of iron-ore in Belgium, in thousands of metric tons, from 1900 to 1908:

	Namur.[1]	*Luxembourg.*[2]	*Liége.*[3]	*Brabant,*[4] *Hainaut, Limbourg.*	*Total.*
1900 . .	31	70	37	110	248
1901 . .	19	74	29	98	220
1902 . .	1	87	25	54	167
1903 . .	—	71	31	84	186
1904 . .	—	92	27	88	207
1905 . .	—	87	21	69	177
1906 . .	4	84	19	126	233
1907 . .	2	84	37	194	317
1908 . .	—	74	35	80	189

In estimating the present quantity of iron-ore existing in Belgium, the Famenian deposit must be regarded as the most important and indeed as the only significant item in Class 1 above. In the case of the recently-formed Campine ore, it must be remembered that, as already observed, this deposit renews itself, so that the amount now existing does not exhaust the potential reserve.

1.	Sedimentary deposits . .	50	million metric tons.
2.	Fissure veins	5	,, ,,
3.	Surface formations . .	7·5	,, ,,
	Total . . .	62·5	,, ,,

b. Germany : Iron-ore other than Minette

The Eifel has been in the past a considerable iron-producing country, owing to the presence of very pure ores in fissure veins, which were worked up and down the country and smelted locally. These mines and ironworks are now completely extinct and need not be further described here.

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[1] Oligist and fissure veins.

[2] Fissure veins and *minette*.

[3] Fissure veins and oligist.

[4] Surface formations.

PART III. OTHER METALS

Metallic ores of various kinds are widespread throughout the massif of the Schiefergebirge. The iron fissure-vein deposits which form an important source of wealth for the country east of the Rhine are, as has been remarked above, now no longer worked west of that river. Certain other deposits in this region are still, however, actively exploited and produce valuable results.

These are, first, the zinc-ores of Aachen, and secondly the lead-ores of the Mechernich district; both situated on the northern slope of the Eifel massif where it begins to merge into the plain of the lower Rhine and Meuse.

A. The Aachen Zinc-mines

These mines [1] occur in a group lying chiefly between Liége and Aachen. They consist of metasomatic deposits of galena, zinc-blende, and iron pyrites, and all these minerals are worked; they seem to have been deposited in the order named, the galena being generally the lowest. Disturbances have, however, greatly affected the deposits, often producing a brecciated structure; and oxidation and other chemical processes have altered the character of the original ores, so that a great mineralogical variety may now be observed in the ores. The most important product is calamine, a valuable ore of zinc. Lead-ore (galena) and iron-ore (pyrites, at Bleiberg hematite) are of minor importance.

The deposits are found in the primary rocks of the Eifel massif, which are here affected by trough-like foldings running roughly ENE.–WSW. The crests of the anticlinals have been denuded away, exposing the Devonian rocks, which consequently alternate with carboniferous and, in the synclinal troughs, with the coal-measures (Westphalian). Over this surface lies a stratum of cretaceous, covering the whole area and masking the underlying structure.

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[1] Atlas, Map 12.

The ores are found in faults crossing, more or less at right angles, the ridges and troughs of the primary rocks. A second system of faults runs parallel to these ridges and troughs, and the most important mines occur when these two systems of faults cross each other. The ore is associated with the Eifel limestone (middle and lower Devonian) and carboniferous limestone, especially where these limestones have a dolomitic character. The Eifel and carboniferous limestones are separated by the sandy slates and shales of the Upper Devonian, the so-called Famenian beds. These seldom contain any ore, which is practically confined to the places where the faults above mentioned traverse the dolomitic or calcareous rocks of the carboniferous or Eifel series. Most of the deposits now being worked occur in the carboniferous limestone, especially in its basal dolomite. This seems to have been the most favourable situation for the formation of the ores.

With regard to distribution, these deposits occur primarily in a group between Aachen and Verviers, with outliers some distance to ENE. and WSW. In the central group. we may distinguish the following systems of deposits.

1. The *Dolhain* veins. These are the southernmost representatives of this group. At Dolhain, Heggen, Grimhaus, Bergenhagen, and elsewhere are faults of the kind described above containing pyrites, which is not now worked. Proceeding northwards lead and zinc-ores begin to appear, but only occur in payable quantities at—

2. *Welkenraedt.* Here two fissures, three-quarters of a mile apart, run side by side. The western contains the Welkenraedt deposit, which is a contact-deposit

between the carboniferous and the shales of the Westphalian coal-measures. The St. Paul mine at Welkenraedt (lead and zinc) is one of the more important mines. Parallel to this and east of it is the Dickenbosch fault running from Ruyff in the north-west to Herbesthal (on the German frontier) in the south-east. This contains a confused mixture of zinc-blende and calamine, the calamine passing in places under the blende. In consequence of this mixing the exploitation of the mine has involved trouble and litigation, since independent concessions were granted for the two ores.

3. The *Lontzen* belt runs parallel again to these two faults, and falls NE. of them in Prussian territory. It contains a series of mines. The Rudolf, south of Lontzen, is a fissure 600–700 yards long, striking N. 25° W., and containing calamine. Further north the Concordia has iron-ore and a little calamine, the Jaegerhaus has iron-ore, and finally Schmalgraf, near the frontier, is an important mine of blende, galena, and pyrites 430 ft. deep and 60 ft. across. The payable ore has been proved to 560 ft. below the surface. The deposits can be traced south of the Rudolf to the neighbourhood of Eupen.

4. The *Vieille Montagne* (or Altenberg) deposit lies in the neutral territory of Moresnet, close to that of Schmalgraf. It is the most important of all the zinc-ore deposits of the Aachen region. It consists of a series of masses of calamine with red clay, lying in a dolomitic pocket of the carboniferous limestone. The chief mass has already produced over a million tons of calamine.

5. The *Bleiberg* (to be distinguished from the Mechernich Bleiberg mentioned below) lies in Belgian territory south-west of Gemmenich. Geologically it is to be considered a prolongation of the Lontzen–Schmalgraf fissure. It is one of a number of veins which contain

in parts hematite, corresponding to the original pyrites, and in parts the original compound of galena, blende, and pyrites. The Bleiberg vein is about 3½ miles long and 3 ft. across. It is filled with a brecciated mixture of grits, shales, and limestones cemented by the ore. Its period of greatest activity was between 1833 and 1870, when it produced 60,000 metric tons of lead and 20,000 of zinc, this metal constituting 18 per cent. of the ore extracted. The working of the mine is seriously handicapped by its liability to floods.

These five groups, most of which are owned and worked by the important Vieille Montagne Company (a concern in which German capital is largely interested), together compose the main central district of zinc-deposits. There remain two outlying districts to east and west respectively.

6. The *Stolberg* district, east of Aachen, contains numerous lode-like deposits of little importance in the Vichbach valley, centring round the Münstergewand fault. Farther east, on the right bank of the Vicht, is the Sandgewand fault with more veins in the carboniferous and Eifel limestones. The latter system contains, south-east of Stolberg and associated with the carboniferous limestone, the great Diepenlinchen mine, where payable ore has been proved to a depth of 820 ft. The Stolberg Company, which owns this site, is the second great zinc-mining concern of the Aachen district.

7. A long series of deposits existed in the Meuse valley, from Sclaigneaux to Angleur. The sites of these are in some cases still marked by zinc-works, but with one exception the mines are shut down. The exception is *Engis*, where the Vieille Montagne Company has a mine consisting of a vertical pocket, enclosed by carboniferous shales and limestone and enclosing galena, zinc-blende, and pyrites. The mouth of the

pocket is covered by Tertiary strata. This Meuse valley system is geologically connected with the Moresnet deposits.

B. THE MECHERNICH LEAD-MINES

On the northern slope of the Eifel, in the valleys running up south-westerly from Euskirchen, lies the large lead ore-bed of Mechernich.[1] This is a sedimentary deposit belonging to the Bunter series of the Trias. Below the Bunter lie the contorted beds of the Devonian greywacke. Immediately above these comes a stratum of conglomerate; then the ore-bed, consisting of conglomerates and sandstones; then another bed of conglomerate, and then red sandstones. The conglomerates contain Devonian pebbles (greywacke, quartzite, sandstone, quartz, and limestone) in an argillaceous and more or less ferruginous paste. Near the ore-bed this paste gradually changes to crystalline flaky galena, cerussite, and copper carbonates. Dolomite, calcite, pyrites, and barytes also occur. The sandstones which alternate with these conglomerates are coarse-grained formations, containing ore-nodules 1–5 millimetres in diameter, which consist of quartz grains cemented into nodules by galena, or more rarely by cerussite, azurite, or malachite. Thus the sandstones, and secondarily the allied conglomerates, form a continuous deposit of lead and copper-ore. The copper is, however, comparatively unimportant. The sandstones are most extensively worked, the conglomerates only in a few sites. The red sandstones are barren.

The ore-bed extends up the valley of the Bleibach from Commern to Call, a distance of 7 miles, and is 1–2 miles broad. The whole is much interrupted by faults, mostly throwing down to north-east. At the northern end of the bed the ore is mostly galena, occurring in nodules as above described. This applies to the Commern neighbourhood, the Gottessegen mine between that village and Mechernich, and generally to the lower portions of the Bleibach valley. Higher up the valley, at Keldenich, in the extreme south of the area, the ore consists of cerussite in thin beds alternating with a reddish clay. The conditions are very variable from place to place within the bed, and no general description can be given which will apply to the whole area. The ore-content of each bed varies continually, and sandstone beds change into conglomerate and *vice versa*. At Bleiberg, on the right bank of the Bleibach, the ore occurs in nodules in a white bed, separated by a non-metalliferous conglomerate 6–150 ft. thick from an upper bed containing much iron.

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[1] Atlas, Map 12.

An outlying occurrence of the same plumbiferous Bunter conglomerates is to be found at Maubach, a few miles up the Roer above Düren.

The mines of this ore-bed date back to a remote antiquity. The pre-Roman Celts mined lead and silver at Keldenich, Mechernich, Commern, and west of the Bleiberg. The Roman road from Cologne to Trier goes through the area, between Calenberg and Strempt, passing west of the Bleiberg among the old workings, and a branch from Eicks to Enzen is still called the Bleistrasse. The Romans had a large group of workings all the way from Call to Mechernich, some on the heights and some at the foot of the slope. The largest are on the Tanzberg between Keldenich and Dottel; others have been identified at Roggendorf, Wallental, Bleibuir, Wielspütz, and elsewhere. On the east side of the Bleiberg mining began in the third century A. D.

This period of early activity gradually gave place to increasing stagnation, till about the end of the sixteenth century the last attempts to continue the old workings were abandoned. In the seventeenth century the nodular sandstone deposits were discovered, the previous work having been confined to the conglomerates; but little was done till 1852, when the method of large surface-workings was introduced and mining was once more actively pursued. As these surface-workings increase in depth they become less profitable, and from 1905 to 1911 the output of dressed ore from the workings of the Mechernich Company fell from 22,000 metric tons to 13,300.

C. Silver and Copper

These are unimportant. Silver has long been a by-product of the Rhineland lead-mines, especially those of the Mechernich bed. It occurs only in very small quantities in the Aachen deposits. Copper occurs in the Mechernich lead deposit, but not in any considerable quantities. There is a deposit of copper-ore in the Rheinvoreifel, an outlier of the important Mansfeld system of copper deposits farther east, but it is of little value.

CHAPTER IX

INDUSTRY

Introduction

The most remarkable fact about Belgium and the adjoining portions of Germany and France is their industrial development. This development is partly due to the presence of great mineral resources (see Chap. VIII), and partly to the favourable situation of our area with regard to lines of communication and international trade; a factor which brought it into prominence as a manufacturing country before the mineral wealth was known or valued. A third factor is the agricultural value of the area from the point of view of industrial crops (flax, beet, &c., and also in some parts wool); a fourth, whether reckoned as a contributing cause or as an effect of the others, is the industrial skill of the population.

The distribution of the industrial establishments is very characteristic.

1. In the first place, an oval area containing parts of Flanders, Hainaut, and Brabant, and bounded by a line running through Antwerp, Ghent, Lille, Arras, Douai, Mons, Brussels, and Lierre, includes a vast number of factories whose existence depends partly on easy communications, partly on agricultural and other products of the region (flax, clay), and partly on a long history of prosperity. This region, for instance, contains most of the great textile industries of Belgium and north France; it also contains potteries, paper-mills, chemical works, metallurgical and mechanical construction works, &c. Its central region is almost devoid of industries, which are distributed round its margin.

2. A group of mixed industries of the same kind exists in the Aachen–Cologne–Crefeld area. Here the chief works are metallurgical, textile, &c.

3. The great coalfield of the Franco-Belgian basin has given rise to a belt of industries from Lens to Béthune through Mons and Charleroi to Liége.

4. The same conditions in Westphalia have produced a mass of great industrial towns on the right bank of the Rhine, between the Ruhr and the Lippe. The Saar coalfield has not given rise to any very intense industrial development.

5. The *minette* ironfield in Lorraine has caused a great growth of industry, chiefly metallurgical, centring round Longwy, Briey, Luxemburg, Thionville, Metz, and Nancy.

Apart from these five great industrial districts there are certain scattered groups of industries, of which we can here only enumerate the most important. Such are the textile, metallurgical, and other industries of Bruges and other Flemish towns north-west of Ghent, Courtrai, and Lille; the ironworks, &c., up the Meuse above Givet; the textile and mechanical works of Verviers; the zinc-works scattered in the Campine; and the quarries of the eastern Eifel.

On the whole, however, the regions outside those enumerated have very little in the way of industry. The coast from Boulogne to Antwerp, with the exception of such towns as Dunkirk and Bruges; the great sparsely inhabited plain of the Campine and southern Holland; and the hill district of the Ardennes and Eifel—these, whether predominantly agricultural, waste or forest land, are only very sparingly industrialized.

A detailed survey of the industries of the whole area being out of the question, the first part of this chapter will be devoted to a short discussion, one by one, of the leading industries of Belgium itself. To what extent these industries have been impeded or destroyed by the German occupation will not be asked, as the detailed information on this subject is obscure and contradictory, and would in any case be out of date before the war is likely to end. The position described is therefore that which obtained before the outbreak of war. Some conception can thus be formed of the relative importance of industries, and the advantages or disadvantages which they have encountered, which will be of value in relation to problems arising after the war.

To supplement this sketch of Belgian industries a second, third, and fourth part will be added, in which the main industrial developments of the districts lying immediately outside Belgium will be indicated.

PART I: BELGIUM

INDUSTRY AND COAL-SUPPLY

Though facility of communications in the north has produced great concentrations of industry at Antwerp, Ghent, and Brussels, many types of industry still tend to localize themselves on or near the coalfields. This is true in proportion as the consumption of coal is high relatively to the bulk of other raw materials; where the latter are very large (as in the case of cotton-mills), or where cleanliness is essential (as in the case of paper-mills), or again where very bulky and heavy articles are made for export (boiler-works and other mechanical construction works) industries move away from their coal-supply.

It is, however, worth considering, in connexion with the distribution of industries in the present and future, the qualities of coal available in any particular district and the industries for which they are suitable.

Couchant de Mons basin.—The Flénu coals (long-flame) are suitable for all industries which require a long flame. Rolling-mills, puddling-furnaces, and forges require such coals; they are also valuable for glass-works, pottery-kilns, gas-works, breweries, and sugar-works, and in general for all industries which require steam to be got up rapidly, or a rapid development of great heat. All these types of factories therefore would best be established, from the point of view of fuel, in the neighbourhood of Mons. A good deal of metallurgical and other coke is produced here also.

Other types of coal are worked in this area, but they can equally well be obtained further east.

Centre basin.—Bituminous and semi-bituminous coals are worked here. These are suitable for raising steam in all ordinary factories, and can also be used in glass-works, forges, and sugar-works, as well as for gas-works and coking. A certain amount of metallurgical coke is made. This district, therefore, is unsuitable for rolling-mills and puddling-furnaces; but glass, pottery, gas, and sugar-works can obtain useful fuel locally, and all factories requiring ordinary steam-power can be advantageously established. Blast-furnaces and steel-works can get coke on the spot.

Charleroi basin.—Bituminous, semi-bituminous, and dry coals are worked, the latter chiefly in the east of the region. The bituminous coals of this region can be used in forges and rolling-mills and for coking; but for the most part they are more suited to breweries, distilleries, brickworks, and lime-kilns, and especially for steam. (A very large proportion of the Charleroi coal is consumed in household use, or made into briquettes for the same purpose.) Very little coke is made, and the local coals are not in general well adapted for gas-works. There are, however, important coal-distilling works at Marcinelle, where large quantities of coal-tar products are made.

From the fuel point of view, therefore, Charleroi is less suited than the districts of the west to support the gigantic iron and steel industry which exists there. The glass-works of the same area would also (again from the fuel point of view only) be better established near Mons or La Louvière. Breweries, distilleries, brickworks, and lime-kilns can get good fuel locally; and ordinary steam-coal is obtainable in unlimited quantities.

Basse–Sambre basin.—Semi-bituminous and dry coals are alone worked in this district. Good steam coals are therefore available locally, and also fuel for brick- and lime-kilns.

Liége basin.—Here again a greater variety of qualities exists. The bituminous coals of Tilleur and Seraing can be used in forges, rolling-mills, glass-works, breweries, gas-works and coke furnaces, the produce of the last being available for metallurgical and other purposes. The Liége district is therefore well suited to the iron and steel industry in all its branches. The semi-bituminous seams give good steam-coals for all purposes, and coals suitable for brick- and lime-kilns are also worked, though in smaller quantities.

COAL-MINING

The distribution, conditions, and prospects of coal-mining in Belgium are considered in Chapter VIII (pp. 355–65; see also Atlas, Maps 6–10), but a few statistical facts may be recorded here.

The total area of the exploitations in the Sambre–Meuse field and adjoining Belgian areas (e. g. the Herve plateau and the Dinant basins) was 53·74 square miles in 1902, and had by 1912 increased to 58·27 square miles, an increase of 1·25 per cent. It is not likely to increase further, indeed a decrease may be expected as certain areas are progressively exhausted. This diminution may, however, be compensated by the southern extensions of the Couchant de Mons and Centre fields.

The production of coal, together with the fluctuations in its value, may be seen from the following table:

Year.	*Output (in millions of metric tons).*	*Value (millions of francs).*	*Value per ton (in francs).*
1904	22·76	286·6	12·59
1905	21·77	275·2	12·64
1906	23·57	353·5	15·00
1907	23·70	399·7	16·86
1908	23·56	380·6	16·14
1909	23·52	337·9	14·37
1910	23·92	348·9	14·59
1911	23·05	340·3	14·76
1912	22·97	380·4	16·56

The production of the various basins in 1912, and the mean value of the produce, was as follows:

	Output (in millions of metric tons).	*Value per ton (in francs).*
Couchant de Mons . .	4·12	16·23
Centre	3·37	16·51
Charleroi . . .	8·49	16·49
Namur	0·80	15·21
Liége	6·18	17·08

The quantity and price of the various kinds of coal mined in 1912 was as follows:

	Quantity (in millions of metric tons).	*Value per ton (in francs).*
Flénu ' or long-flame (> 25 per cent. v.m.) .	2·10	16·01
Bituminous (16 – 25 per cent. v.m.) . .	5·69	17·51
Semi-bituminous (11 – 16 per cent. v.m.) . .	10·04	16·93
Dry (< 11 per cent. v.m.)	5·14	15·02

A certain proportion, about 9·8 per cent. of the output, is consumed on the spot by the collieries themselves. This must be subtracted from the output in order to find the quantity of coal which reaches the market:

1912	Total production . . .	22·97 million tons
1912	Used by collieries . . .	2·25 ,, ,,
1912	Sold	20·51 ,, ,,

Coke

In 1912 there were thirty-eight coke-factories working. With three exceptions these were situated in Hainaut and Liége; 3·186 million metric tons of metallurgical coke were produced, and 4·166 million tons of coal consumed, 36 per cent. of which came from abroad. The value of the product averages from 25 to 38 francs per ton.

Briquettes

Sixty-one briquette factories existed in 1912. These were mostly in Hainaut, with a few in Liége and Namur provinces; they consumed 2·44 million tons of coal and produced 2·69 million tons of briquettes.

These two industries absorbed in 1912 6·6 million tons of coal, i. e. 27 per cent. of the country's net output.

	Importation (metric tons).	*Exportation (metric tons).*
Briquettes	437,000	623,000
Coke	955,000	1,016,000
Coal	8,132,000	5,058,000

The importation figures show a great increase during recent years. The production remaining more or less stationary, the consumption has gone steadily up.

(Millions of metric tons)

Year.	*Consumption.*	*Exportation.*	*Importation.*	*Relation of imports to exports.*
1904	20·23	6·7	4·2	−2·5
1905	20·99	6·4	4·7	−1·7
1906	22·80	6·5	5·9	−0·5
1907	23·24	6·2	5·9	−0·3
1908	22·58	6·4	6·0	−0·4
1909	23·75	6·5	6·3	−0·1
1910	24·13	6·8	7·3	+0·5
1911	24·84	7·0	8·6	+1·6
1912	26·08	6·9	9·8	+2·8

The figures for coke are as follows (in millions of metric tons).

Year.	*Production.*	*Imports.*	*Exports.*	*Consumption.*
1904	2·5	0·3	0·9	1·9
1905	2·5	0·3	1·0	1·9
1906	2·7	0·3	0·8	2·2
1907	2·8	0·4	0·9	2·3
1908	2·6	0·3	0·9	2·0
1909	3·0	0·3	1·0	2·3
1910	3·1	0·5	1·0	2·6
1911	3·2	0·7	1·0	2·8
1912	3·2	1·0	1·0	3·1

Briquettes

(Millions of metric tons)

Year.	*Production.*	*Imports.*	*Exports.*	*Consumption.*
1904	1·7	0·05	0·54	1·2
1905	1·7	0·07	0·48	1·3
1906	1·9	0·15	0·46	1·6
1907	2·0	0·15	0·43	1·8
1908	2·4	0·18	0·49	2·1
1909	2·7	0·16	0·56	2·3
1910	2·6	0·28	0·54	2·4
1911	2·8	0·38	0·53	2·6
1912	2·7	0·44	0·62	2·5

Iron-ore (and other Ores)

The only output of any importance is the Campine (bog) ore, worked in surface-workings. There were 49 workings, employing 160 men, in 1912.

Antwerp and Limbourg provinces	64·92 tons
Luxembourg	78·46 ,,
	143·38 ,,

In the province of Liége oligist (oolite) ore is worked in surface-workings; 23,990 tons were extracted in 1912.

QUARRIES

In the hill-district of southern Belgium primary rocks come everywhere to the surface. In the plains of the north these are covered by later deposits; but the river-valleys of central Belgium are cut down through the later formations, so that in the head-valleys of the Senne, Dyle, and Jette the ancient rocks can be found on the river-banks. Thus the chief quarry-districts of Belgium occur first in the Ardennes massif, and secondly in the valleys of the northern rivers, south of the latitude of Brussels.

Valuable Deposits

Cambrian.—Purple slates, resembling Welsh slates, are found in the neighbourhood of Rocroi, at Oignies and Rondterne in the south-west of Namur province, and also at Vieil-Salm. Whetstones are made of a similar formation at Salm-Château, and paving-stones of the quartzite at Nil-St. Vincent, Opprebais, and Dongelberg in Brabant.

Devonian.—Paving-stones of Birlonfosse, Wépion, Thuin, Poulseur (Ourthe valley), Honyoux, and the Meuse valley; slates of Neufchâteau, Grapfontaine, Rochehaut, St. Médard, and Herbeumont. Marbles of many sites in Namur and Hainaut, Wellin, Marchin, Tailfer, Lustin, Gougnies, Feluy, Frasnes, Philippeville, Villers, &c.

Carboniferous.—Limestones of Hainaut (Ecaussines, Feluy, Maffles, Soignies), and the Meuse and Ourthe (Sprimont, Martin-Rive, Yvoir, Dinant, Namèche, &c.), known as *petit granit.* Hydraulic limestone of Tournai, in numerous quarries between Allain and Péronnes; limestones for lime-burning between Namur and Liége; black marbles of Dinant, Basècles, and the Namur district. Carboniferous grit is worked for paving-stones in the Liége and Hainaut provinces.

Triassic.—Certain grits are worked in small quarries for building-stone.

Jurassic.—Longwy limestone at Grandcourt and elsewhere in the south of the Luxembourg province furnishes excellent stone for ashlar work. Wealden clays are used for fireproof and other pottery at Hautrages, Baudour, La Louvière, Tertre, &c.

Cretaceous.—St. Vaast chalk is worked on a large scale at St. Vaast, Trivières, Mont-Ste. Aldegonde, Péronnes, &c. The Obourg chalk is worked for lime at Obourg, Strépy, Trivières, Givry, and Cuesmes. The very pure Nouvelles chalk is worked at Harmigny, Spiennes, and Nouvelles; at Spiennes it contains flints used by potteries. Phosphate-beds are found in Hainaut and the Hesbaye.

Eocene.—Grits from Grandglise, Tirlemont, and elsewhere are worked for building-stones; clay, formed by the alteration of argilite, is used for brick-making; Ypresian clay is much worked at Courtrai, &c. Eocene sands from several sites in Brabant are used by glass-works.

Oligocene.—Boom clay (brick-earth); Andenne fireproof clay.

Quaternary.—Campine glass-sands (Moll, Lommel, Genck, Waltwilder); Hesbaye, Hainaut, and Brabant, brick-earth.

Industry

There are about 1,600 or 1,700 quarries, of which all except about 400 are surface-workings. The underground workings are mostly devoted to phosphates, marble, pottery-clay, and slates; building-stones are practically always obtained in surface-workings. The largest and most important quarries are those of the limestone known as *petit granit*, which is worked in Hainaut at Ecaussines and Soignies, and in Liége at Sprimont in vast quarries, and cut, prepared, &c., in great yards. The blocks, which often weigh 50 or 60 tons, are lifted from the quarry and arranged in the yard by a crane of the *pont-roulant* type, after which they are cut (generally with a diamond circular saw), shaped, polished, &c.

The next most important group of quarries consists of those which produce porphyrite, grit, or limestone paving-stones; one of the largest is the Quenast quarry, which works a porphyry dike by means of eight terraces, each 33 ft. high.

Marble is worked either in surface or underground workings; the blocks are not worked on the spot but sent to skilled workers after being cut up by the circular saw.

Slates are especially quarried in the Luxembourg province, where, in the neighbourhood of Vieil-Salm alone, twenty-four distinct types of slate are made, running from 12 to 100 per square metre of roofing. In the quarries of Herbeumont, Warmifontaine, St. Médard, and Bertrix, thirty-one types varying from 11·2 to 120 per square metre, are made.

Commerce

Stones and slates are exported chiefly to France, Holland, and Germany, which take up respectively 46 per cent., 24 per cent., and 16 per cent. of the total Belgian export. Slates are also imported, the imports being slightly greater than the exports, and coming mostly from France. For quarry-produce of all kinds the exports are about twice the imports.

Quarries, &c., outside Belgium

The French portion of the Ardennes, being geologically akin to the Belgian, also possesses quarries, of which the most noteworthy are the very important slate-quarries of Fumay. These, and others in the neighbourhood, supply roofing-slate to most of the French Ardennes villages.

Various kinds of stone are extensively worked in Lorraine, e. g. the coral-rag of the Côtes de Meuse, worked in numerous quarries on the banks of the Meuse above and below Verdun, and the same is true of the similar stone of the Briey plateau. But the most important quarries in our area and outside Belgium are those of the Pellenz.

These quarries, situated in the Eifel not far from Andernach, work the lava-streams which flow from the volcanoes of the Laach district. Niedermendig and Plaidt are the two chief centres; these are large villages whose population is engaged exclusively in the industry. The quarries have been worked at least since the Roman period, chiefly for millstones and building-stone, and there are numbers of abandoned workings. The stone goes mostly to Andernach, where it is shipped for transport to all parts of western Germany and even farther afield.

A stone industry, which ought to be mentioned here, is the marble-working industry of the Avesnes district in France. The centre of this industry is Cousolre, the frontier village of France east of Maubeuge. Here a group of Belgian workmen settled in 1835, in order to supply the French market without paying the high import duties. The raw material is all brought from a distance, and includes, in addition to Belgian stone, sarrancolin from Hautes-Pyrénées, cipolin from Ariège, rouge-acajou from Haute-Garonne, and other French marbles; Algerian onyx-marble, various Italian varieties, &c. The industry is in a prosperous condition, which it owes to the protective duties on finished articles; for Belgium, with its good coal-supply, cheap transport and labour, and low patent-fees could, apart from these duties, flood the French market with its cheaper goods. On the other hand, the Cousolre manufacturers complain that they are seriously handicapped by the Franco-Belgian commercial treaty of 1861, partly because this treaty lowered the protective duties, but still more because the scale which it established was unduly favourable to Belgian exporters in comparison with French exporters.

The industry employs about 3,400 hands, whose wages vary from skilled workers with 5 or 6 francs a day to apprentices with 1–2 francs.

METALLURGY

Iron and Steel-works

Belgium has two chief centres[1] of the iron and steel industry. These are (*a*) the Liége and (*b*) the Charleroi districts. The Liége district occupies the Meuse valley from Liége upstream to Flémalle; the Charleroi district occupies the Sambre valley above and below Charleroi

[1] *See* Atlas, Map 14.

from Hourpes to Châtelineau. These areas are built over with an uninterrupted succession of blast-furnaces, steel works, and foundries.

There are two other centres of minor importance. In the extreme south of Belgium, foundries exist at Musson, Halanzy, and Athus in connexion with the *minette* field, and at La Louvière, in central Hainaut, are two blast-furnaces, two steel-works, and rolling-mills.

A few isolated establishments must also be noted. At Clabecq, near Hal in Brabant, is an ironworks with forges and rolling-mills; at Jemappes (Mons), workshops and rolling-mills; steel-works at Bruges; a number of rolling-mills in the Hoyoux valley between Huy and Modave; and a few small establishments in the Namur province.

In general it may be said that, while pig-iron is produced in all the metallurgical centres, cast-iron is confined to the Luxembourg province works, Bessemer pig to Liége, and Thomas pig to Liége and Charleroi.

The modern steel industry dates from 1864, when the first Bessemer converters were installed in the Cockerill works. Martin puddling-furnaces were introduced in 1872, and Thomas-Gilchrist (basic) converters in 1879.

About 55 per cent. of the total ore treated in Belgium comes from Luxemburg, and consists of *minettes*, averaging 35 per cent. of iron destined for treatment by the basic process. Of the rest 11 per cent. comes from Spain (chiefly Bessemer ores), and the remainder chiefly from Germany, Algeria, and Norway. Norwegian phosphoric ores are coming into increasing favour in Belgium, especially in combination with other ores. The flux is generally obtained near the ironworks; the coke used in the blast-furnaces is almost exclusively produced in Belgium. The pig-iron for treatment in the puddling-furnaces of the steel-works comes principally from France and Germany.

From the steel-works the ingots pass on to rolling-mills, where they are made into girders, rails, plates, &c. Many rolling-mills are now driven by electric power generated by the waste gases of blast-furnaces. A 150-ton furnace will supply 2,000 horse-power for this purpose, and great economy results from utilizing this power, which is used not only for driving the rolling-mills but for many other purposes in connexion with the steel-works.

The iron and steel industry exports about 67 per cent. of its produce; England, India, and Holland being the chief consumers.

Fifty blast-furnaces were at work in 1912. These consumed 6·3 million metric tons of ore, of which 1·4 per cent. (89,860 tons) was of Belgian origin. This proportion is steadily decreasing. They consumed also 2·45 million tons of coke, of which 20·8 per cent. came from abroad (511,850 tons). Their output was 2·3 million tons of pig. This is more and more exclusively destined for steel-works, the produce of cast iron and other products now being very low.

1912:	Production of pig	2·301	million metric tons.
	Imports of pig	0·780	
	Exports of pig	0·014	
	Consumption of pig	3·067	

Of the consumption 25·4 per cent. is imported; exports represent only 0·6 per cent. of the production.

Twenty-nine steel-works and steel-foundries existed in 1912. They consumed 3·19 million tons of pig; 2·6 Belgian (82 per cent. of the total Belgian output); 0·559 of foreign origin; 17·5 per cent. of their pig thus comes from abroad. Their total output of steel is 2·53 million tons. This is consumed in turn by rolling-mills and other works which produced finished steel goods (girders, rails, plates, &c.) to the amount of 1,399,000 tons.

175,000 tons of pig are consumed by puddling-furnaces, which produce 150,000 tons of puddled iron.

The entire iron and steel industry consumes the following quantities of coal and coke (in metric tons):

	Coal.		*Coke.*	
	Belgian.	*Foreign.*	*Belgian.*	*Foreign.*
Blast-furnaces .	26,500	—	1,939,500	511,800
Steel-works .	615,900	114,000	101,300	6,900
Rolling-mills, ironworks, &c.	417,800	129,900	—	—
Total . .	1,060,200	243,900	2,040,800	518,700
Grand totals .	1,304,100		2,559,500	

This represents about 20 per cent. of the country's whole consumption of fuel.

Zinc-works

Belgium has for many years been one of the world's chief producers of zinc. She derives her ore almost exclusively from the small but very rich group of deposits on the German frontier between Liége and Aachen and in the neutral territory of Moresnet. Here is a group of six mines in the neighbourhood of Bleiberg, Neutral Moresnet, Schmalgraf, Astenet, and Lontzen (see pp. 413–16).

The ore from these mines is treated partly in Germany, partly in Belgium. In the latter country the works are distributed in two groups, one along the Meuse and Sambre and the other in the Campine. The Sambre–Meuse group begins at Aiseau near Charleroi; other factories are at Vedrin, Sclaigneaux, Engis, Angleur and Prayon near Liége, Maastricht, Eysden, and Rothem. The Campine group comprises works at Baelen-usines, Lommel, Neerpelt, Overpelt, Hamont, and Budel in Holland. Many of these works were owned and worked before the war by German capital; the largest company of Belgian zinc-works, namely, the Vieille Montagne company, which owns several of the mines, and has its smelting furnace at Angleur.

There are thirteen zinc-works in Belgium, and ten rolling-mills for the treatment of zinc.

These works consumed in 1912 488,030 metric tons of foreign ore and 840 tons of Belgian ore; total, 488,870 tons. The Belgian ore comes exclusively from a single mine, that of Maison Blanche (Welkenraedt). The zinc-works consumed also 997,740 tons of coal. They produced 205,940 tons of zinc; the rolling-mills produced 49,120 tons of finished products.

Lead and Silver

Lead and silver works, five in number, produced in 1912 54,940 tons of lead and 280 tons of silver.

The chief iron and steel-works outside Belgium are situated first in and near the *minette* field, viz. at Luxemburg, Longwy, Briey, and especially in the Moselle valley and its tributaries, the Fensch and Orne (for details see Atlas, Map 7); secondly, at and near Aachen; thirdly, at Lille and in the neighbouring districts.

MECHANICAL CONSTRUCTION

The mechanical construction industry is the most important of all the Belgian industries, as regards the number of firms which it occupies; and its place is almost equally important as regards the hands employed, the value of the output and the quantity of produce exported. There are about 1,200 firms engaged in this class of work, employing over 60,000 hands; many of these firms carry out several different kinds of mechanical construction, and even possess a number of distinct factories. The annual output is estimated at £14,000,000, of which 40 per cent. is exported.

In gauging the importance of the industry, too much stress must not be laid on the number of different establishments. It is typical of this industry that many factories are only concerned with one process or a limited number of processes in the making of an object, which before it is completed passes through the hands of many firms. On the other hand, a great quantity of work in the way of repairing, assembling, and even to a certain extent constructing machines is done by private shops annexed to factories which use the machines, e. g. power-stations, railway and tramway dépôts, textile mills, metallurgical works, &c., and of this no account is here taken.

The distribution of the industry is simple, and its localization intense. The greatest concentration of establishments is at Liége, where there are some hundreds. The whole of the Charleroi district forms a centre of not much less importance. Next comes Brussels, then the Couchant de Mons, Centre, Ghent, and Antwerp. All these are centres of considerable magnitude. Smaller groups occur at a number of towns, such as Hoboken, Boom, Willebroeck, Malines, Louvain, Tirlemont, Namur, Huy, Verviers, Tournai, and Bruges; and many others, chiefly in Flanders and Brabant, have a few isolated works. In the Campine, except at Herenthals and Turnhout, they are entirely absent; in the hills of the south, almost so, except for a few between Arlon and Virton, depending on the neighbouring *minette* field.

The great importance of this industry in Belgium is largely due to the admirable supply of raw materials. Of these the first are steel and coal, both accessible in large quantities in central Belgium; many other necessaries of a specialized kind which are not made in Belgium are imported easily and cheaply from England, northern France, or western Germany. An equally valuable asset is the mechanical ability of the Belgian working man, which appears to be of a high order, and is enhanced by the work of the Belgian technical schools. The result of these conditions is a high level of intelligence and initiative among the designers, draughtsmen, &c., in such works. The education of foremen is less satisfactory, and improvements in this direction are desired; but here also the standard of ability among the men is very considerable.

Beside coal and iron, in all its metallurgical forms, the most important raw material is lubricants, of which vast quantities are consumed.

The types of work included under the head of mechanical construction include, according to the Belgian classification, stationary constructions (bridges, girder-work for pit-heads, armatures for reinforced concrete buildings, &c., boilers, &c.), apparatus for general purposes (steam, water, and internal combustion engines, &c.; pumps, cranes, and transporters; castings), apparatus for special purposes (machinery for mining, farming, and all kinds of industry, and munitions of war), and finally for locomotion (motors and cycles, railway and tramway stock, boats and ships). On the two last classes no detailed reports have been published. Electrical construction is a separate category.

Certain large establishments (e. g. the John Cockerill Company) do work of all these kinds, or almost all; but for the most part a given factory turns out work in one or two categories only.

Bridges and other Girder Constructions: Boilers

Work of this class is mostly done in Hainaut, where there were in 1907 ninety-nine factories (almost half the total number in Belgium), disposed in three groups, round Charleroi, in the Couchant de Mons, and in the Centre coalfield respectively. Larger than any of these groups singly is the group of about thirty-five factories at Liége. Groups of secondary importance occur at Brussels, Ghent, and Antwerp, and minor groups at places like Hoboken, Malines, Willebroeck, Louvain, Tirlemont, Tournai, &c. In the provinces of Namur and west Flanders the industry hardly exists, and in Limbourg and Luxembourg it is absent.

The distribution of the industry depends primarily on the local development of metallurgy; secondarily (in the Antwerp–Ghent–Brussels district) on the existence of great navigable waterways capable of exporting the products and bringing marine boilers, &c., directly to their destination.

Most of the establishments are comparatively small; 80 per cent. employ under 50 hands, and only 7½ per cent. over 100.

Of the factories devoted to girder construction 81 were especially concerned with industrial structures (pit-head gear, bridges, &c.); 28 with armatures for reinforced concrete town buildings; and 48 with small local demands. Boiler-making on a large scale is done partly by the same firms, partly also by specialists; comprising in all 114 establishments. Several of these deal only with one particular type of boiler; 11 firms specialize in locomotive and 7 in marine boilers. The smaller firms of this class include 49 establishments which carry out small works in galvanized and other sheet-iron. Among the larger firms are several which do work of other kinds, e. g. naval construction, railway rolling-stock, &c.

Of the total production about 33 per cent. is exported; the remainder is consumed in Belgium, where there is a steady demand for all these classes of work in connexion with new buildings in the towns, new and improved factories, bridges, docks, sluices, railway stations, &c. Hardly any work of this kind is now imported into Belgium; even the more complicated kinds of water-tube boilers are now made in the country. A few types of a highly specialized kind in connexion with boiler-fittings (notably injectors) are still as a rule imported from England and Germany.

Of the exports a large proportion is accounted for by railway bridges, of which examples from Belgium are to be seen in most countries of the world. Her chief rival in the international market is the United Kingdom, but Germany also has recently come to the front.

Engines (animal-power, water, steam, internal combustion); transmission gear; pumps, blowers, and ventilators.

This industry is in practice so much combined with other branches of mechanical construction that detailed statistics of it in isolation are hardly possible. The general facts can, however, be stated as follows.

It is an industry of great importance, in which Belgian products attain a high level of excellence. It is strongly localized, the centres of production being Liége, Brussels, Ghent, Antwerp, and the Hainaut coalfield. Whereas, however, in the last-named branch of mechanical construction the Hainaut coalfield was the chief centre, in this branch it is far less important, and is, as a whole, surpassed by either Liége, Brussels, or Ghent. This is to be explained by the fact that the amount of raw material to be handled is not so vast, and consequently the tendency to confine the industry to the neighbourhood of ironworks is less marked.

Animal-power engines are only made by a few small agricultural implement factories. Water-wheels and turbines are so little used in Belgium that their manufacture is inconsiderable, and only important at and near Verviers, where the Gileppe barrage supplies water-power.

Steam-engines are made by 89 firms, of which more than a third are in Hainaut. The output, though it cannot be exactly stated, is very large, and comprises engines of all types, including specialized types for various industrial purposes. The largest and most developed establishments are at Ghent and Brussels, where powerful engines for textile mills, electrical power-stations, &c., are built. The factories of Liége and of the Charleroi district are concerned more particularly with engines for coal-mines and rolling-mills; those of the Centre basin with industrial engines in general; those of the Mons basin with engines for collieries and sugar-factories. Belgian consumers can thus find almost any required type of engine without buying abroad. There is also a large exportation, amounting to about one-third of the production, and finding a regular market in many countries, e. g. the United Kingdom. From Germany they are excluded by a high tariff. Tariffs to France and Italy are also high, but France has nevertheless a considerable market for Belgian engines.

Internal combustion engines are made at Liége, Brussels, and Ghent, and to a less degree in Hainaut. The industry is of recent development, but has attained very considerable dimensions. The motors made are chiefly of low power, and used for agriculture and small industries; about ten firms make motors for launches, cars, and cycles (of these the Fabrique Nationale at Liége is well known in all countries); a dozen turn out gas-engines of a heavier type; two make powerful motors which use the waste gases of the blast-furnace; five make Diesel and other heavy-oil engines. This industry has been severely hampered in Belgium by British and German competition, but it is now firmly established, and even exports heavy-oil engines in large and increasing quantities to the United Kingdom.

The making of pumps is a complex industry, the number of types required for various purposes being almost infinite. Here, too, the Belgian manufacturers, beside supplying their home market, now export their products to many European and other countries.

Lifting and Transporting Mechanism

This type of machine is made chiefly in the Liége and Charleroi districts; to a less extent at Brussels, in the Centre, and in the Couchant de Mons; and smaller groups of factories exist at Namur, Ghent, Antwerp, Tirlemont, &c.

In some cases these industries are specialized; in others they are connected with kindred industries. In the former class come the factories which make screw-jacks, lifts for hotels and houses, capstans, and various types of transporters; lifts for industrial purposes are generally made, together with other machinery for the same industries, by firms with experience of the requirements of those industries. Thus cages for collieries would be made by the same firms (in Hainaut) which make engines, and even perhaps head-gear, for the collieries. Cranes also are usually made by firms whose chief concern is with mining or metallurgical plant, rolling-stock, girder construction, or the like.

Cableways and light railways are a speciality of certain firms; these, however, are seriously affected by German competition. There is a steady market for this class of goods in Belgium, especially in connexion with mining and quarrying and also in the construction of public works, and also a fair export.

Castings and Forgings

Mechanical construction works have in some cases their own foundries, but many prefer to obtain castings and forgings ready-made and worked up to a certain extent. A large number of Belgian firms occupy themselves entirely in supplying this demand. These are situated especially near Charleroi (especially on the right bank of the Sambre), at Liége and Herstal, and in the Centre; smaller groups are at Brussels, Ghent, and elsewhere. The castings include pieces in iron, steel, and bronze; the forgings are in iron and steel. The importation in all these objects is trifling, e. g. a few steel castings for the construction of automobiles from France; there is, on the other hand, a considerable export to a number of countries.

Electrical Plant

This is an industry of recent development, and apart from its chief centres at Brussels and Liége, it hardly exists except in small groups at Charleroi and Antwerp and in a few scattered establishments. In 1907 there were forty-eight establishments of this class. Individually they vary widely in importance; half the factories only employ three to ten hands, and between one and five horse-power; and therefore the large number of establishments at Liége and (especially) Brussels does not necessarily indicate an overwhelming development of the industry in those towns. The most important single factory is the telephone factory at Antwerp.

The industry began its career under the disadvantage of very strong competition, especially from Germany, but is by now firmly established, though the opinion is generally held that trifling changes in the economic situation would be enough to reassert the supremacy of German goods in Belgium, and that a protective tariff ought to be erected. By 1908 the total production was about £1,000,000, of which 42 per cent. was exported. The exports consist especially of telephone apparatus, and secondly of dynamos, which form half the total output of the industry.

The Fire-arms Industry of Liége

This industry, established as one of the chief occupations of the Liégeois since the sixteenth century, deserves a separate notice. It is largely carried on in the private forges and workshops of the workmen themselves, each man conducting one operation in which he attains a high degree of skill; this skill is generally transmitted from father to son, and may remain for many generations in the same family. Each skilled worker is thus, as a rule, his own master, and works for one or more factories as he finds it convenient.

The manufacturer buys the barrels from the independent worker who makes them, and hands them over successively to the fitter, the breech-fitter, the 'systémeur' who fits them to the lock, separately made by the lock-maker, and the workman who fits the stock; finally the finisher adjusts them before they are nickelled, polished, engraved, &c. In some factories a fire-arm enters and leaves the factory, in order to undergo these and other operations, as many as thirty times before it reaches the purchaser.

The amount of hand-labour formerly required in the making of a gun is now considerably reduced by the mechanical production (by stamping machinery) of such parts as breeches, &c., which were formerly hand-forged by the workmen out of solid blocks of steel. Opinion is, however, unanimous that machine-work can never supersede hand-work to any great extent. The reason given for this opinion is that the Liége arms industry depends for its prosperity on the great diversity and originality of its products. Every year new models are produced to meet or anticipate new demands on the part of dealers, and this flexibility is an important asset of the industry. Another reason is that the present system facilitates and indeed ensures the maintenance of a high standard, each workman being individually responsible for the satisfactory character of the article he has made. On the other hand, machine-made weapons have, in the hands of the Fabrique Nationale, attained a high degree of excellence, and are made on a very large scale.

The products of the industry may be classified as follows:

Barrels and detached parts.—Barrels of every kind and size from 3 to 38 millimetre bore are made to be sold separately, also various parts such as action pieces.

Army rifles, of which almost every make has at one time or another been made at Liége.

Pistols of all kinds, from Browning to other automatic pistols, to saloon, duelling, and ramrod pistols.

Sporting guns, including types copied from those most in favour in this country, and shot-guns of every class and price.

'*American guns*' made for export to Canada and U.S.A. at prices below £1.

Carbines, including saloon and air rifles.

Revolvers, a speciality of the Liége industry.

Obsolete guns, flint-lock and percussion cap models, &c., for export to uncivilized countries.

Transformed military rifles, mostly made up as shot-guns, and exported to Australia, the Argentine, and Mexico.

As is natural, in view of the system above described, there are for the most part no fixed scales of wages and prices; these fluctuate according to supply and demand. In the Fabrique Nationale wages vary, according to the type of work done, from 3 fr. 50 to 6 or 7 francs per diem; but the independent workman earns what he can make from time to time. 137 firms are given as actively engaged in the fire-arms industry; many of these are engaged on other kinds of work (cycles, motors, ironmongery, &c.), and the list does not include the private establishments of individual workmen.

The testing of fire-arms is carried out at the Liége Proof House, and is ensured and regulated by law. The Proof House is a large establishment, capable of making between two and three million tests in the course of a year. On average each arm produced is submitted to about two tests; for many one is enough, while some undergo four or five separate tests. The tests include measuring and gauging barrels, loading and firing, the last process done in a room closed by steel shutters. Finally the barrels are minutely inspected, and those which are found to be defective are broken up. The maker, besides in every case paying the testing-fee, in this case bears the whole loss.

For the education of the workmen the Liége School of Armoury was established in 1897, and assisted by a subsidy voted by the arms manufacturers of the town. Here instruction is given by competent and experienced teachers, dealing with all branches of the trade; pupils can therefore obtain tuition in the particular branch in which they intend to work, and after receiving a certificate of competency from the school can at once get employment either in their family workshop or under a piece-worker. The fee for a regular pupil is 4*s.* a year; pupils are accepted in the order in which their applications are received, and are taken on trial for a month. Regular pupils receive 25 per cent. of the value of the work which they turn out in the school shops; this is placed to the pupils' credit and forfeited if the pupil is expelled or otherwise leaves the school prematurely.

SPINNING

Cotton

Of 40 cotton-spinning mills at work in 1896 29 were in East Flanders, and of these 20 were at Ghent, including its suburb Ledeberg. Of the rest 7 were in Brabant, mostly in the *arrondissement* of Nivelles, and 4 in Hainaut. Ghent is thus by far the most important centre of the industry. The mills are for the most part large establishments with 50 to 200 employés, and many of them are old-established concerns dating back to the middle of the nineteenth century or before.

Most of these mills also make twist, or thread composed of several strands; but there are in addition 12 twist-mills, or mills which make twist alone. Of these 6 were in East Flanders, 3 in Brabant, 2 in West Flanders, and 1 in Hainaut. These are much smaller establishments, having in no case over 100 employés, and generally below 50.

Beside cotton, the most important raw material consumed by this industry is coal, of which a large quantity is required for steam-power. The above mills use over 8,000 tons per month, the spinning-mills of Ghent alone consuming over 5,000. This coal is almost exclusively Belgian in origin; when prices are very high a little French or English coal is used. The advantage which the Brabant and Hainaut mills derive from their proximity to the coal-supply is more than counterbalanced by the greater cost of the transport of cotton from the sea. It is thus important to observe that cotton-spinning is an industry whose distribution is more affected by the transport of cotton than by that of coal; hence its localization away from the coalfield in the direction of the sea.

The machines required in the industry are numerous and costly, and entail a considerable expenditure of capital. They are not much built in Belgium, where there is an insufficient market to encourage mechanical-construction works to specialize in this type of machine, and the machines used in Belgium come almost exclusively from England. The cost of getting this machinery from England is so great that an average machine set up in Belgium costs 50 per cent. more than the same machine set up in a Lancashire mill. The boilers, steam-engines, and transmission-gear used are, however, Belgian, many Belgian firms (at Ghent, Cureghem, Seraing, &c.) having specialized in the type of steam-engine required for this work.

Cotton-spinning is one of the most important of the Belgian textile industries, and made great progress during the last quarter of the nineteenth century. For the most part its output is devoted to supplying the looms of Belgium, but 7 to 8 per cent. is exported, chiefly to Holland and Switzerland. Since 1882 an increased tariff has cut off the market formerly existing in France; in Belgium the chief competitors are English spinners, who send thread to Belgium at low prices at moments when their usual market in other countries is temporarily over-supplied. At other times the Belgian mills have no serious competition to face.

A Belgian official report compares the conditions of the industry in Belgium and England in the years immediately preceding the war. From this report it appears that the English workman's superior skill is fully balanced by the higher wage which he commands, so that the only marked advantage which English manufacturers possess lies in their specialization to threads of one thickness, which results in a considerable economy in time and labour. In Belgium trade conditions make it difficult to obtain this specialization, which is rendered possible by the better organization of the British trade. It would appear that the Belgian spinning-mills would long have been ousted even from the Belgian market by British goods but for the existence of a protective tariff on thread. This tariff is, however, considered by weavers detrimental to the quality and success of their own products, especially on foreign markets. English coal is both better and cheaper than Belgian, and it is said that Belgian buyers of raw cotton are at a disadvantage —though not, apparently, a very grave one—in comparison with English merchants who need not send their raw material far from its chief port and market at Liverpool.

Linen-thread

The centre of the linen-thread, as of the cotton-thread industry, is in East Flanders, and especially at Ghent. Of the 28 mills in Belgium that town contains 13, and East Flanders, as a whole, 17, while West Flanders has 5, Hainaut 3, Brabant, Liége, and Antwerp 1 each. These mills are mostly large establishments; the majority have 200 to 500 employés, and some have over 2,000. Many of them date from the nineteenth century.

The raw material, viz. flax, comes mostly from Russia, Holland, France, Belgium itself, especially the western districts, and of late years increasingly from Ireland, as the Belgian output of flax diminishes. The retting of the flax-stalks is carried out in especially favourable conditions in the unusually suitable waters of the Lys; this fact is not unconnected with the high quality of the Courtrai linens.

These mills consume a large quantity of coal, viz. about 7,000 tons per month. In spite of their dependence upon coal, however, they are like the cotton-mills situated at a distance from the coalfields. This may be due in part to the same conditions which obtain in the case of cotton, viz. that it is cheaper to carry coal over a considerable distance than to carry the raw material of the mills. In part the distribution of the linen-thread mills is also perhaps due to the position of the Belgian flax-fields, and to the existence of the industry in Flanders since before the days of steam-power.

The machinery in use, with all spare parts, &c., comes from England; the boilers, steam-engines, and transmission-gears are made at home.

Unlike the cotton-mills the linen-mills export largely, above all to England and Germany. This export consists of coarse and medium threads; fine thread is imported, especially from France and England. There is no import duty, and the industry appears to have been, up to the commencement of the war, in an exceptionally flourishing and vigorous condition.

Other Spinning Industries

There are five small mills in East Flanders (Lokeren and Hamme) which spin hemp. A little hemp is grown in Flanders, but most of the raw material comes from the East Indies, Italy, Russia, or Germany. The processes resemble those of flax-spinning. The produce is largely exported to England.

Twelve mills in East and one in West Flanders are engaged in spinning jute. These are larger establishments than the hemp-spinning mills, and are mostly combined with mills of other kinds. The raw material comes almost exclusively from India by way of England, and the finished product is mostly consumed in the country. The chief competitors are the French industry, situated at Dunkirk, and the Scottish at Dundee.

WEAVING

The district lying between Ghent, Ypres, Arras, and Cambrai has for many centuries been one of the chief weaving districts of the world. At present the different weaving industries of Belgium have separated into locally distinct groups. The woollen industry is especially localized at and near Verviers; cottons are made at Ghent and a few other centres such as Renaix, Mouscron, and Braine-l'Alleud, and linens are practically confined to Flanders.

Woollens

Carded woollens—i. e. those having a 'nap' which conceals the individual threads, such as cloth, flannel, &c.—are made primarily at Verviers and the neighbouring towns of the Vesdre valley, Dison, Hodimont, Ensival, and Pepinster; secondly, in a scattered area round Antwerp, at Eecloo, St. Nicolas, Malines, Gheel in the Campine, and Duffel, the last an ancient centre of the cloth industry; and thirdly, in various outlying places such as Sclessin, Louvain, Sterrebeek between Louvain and Brussels, and Beaumont on the French frontier east of Maubeuge.

Combed woollens—i. e. those with the grain of the thread showing, such as tweeds, merinos, &c.—are made in the Verviers group and at Dinant.

Half-woollens are made in districts whose typical product is cottons, e. g. Renaix, Braine-l'Alleud, St. Nicolas, and Mouscron.

The great concentration of woollen industries in the Vesdre valley is chiefly due to the fact that abundant water suitable for washing wool is to be had there; see p. 460 for the influence of this on one branch of the chemical industry, viz. the production of potassium salts as a by-product of wool-making.

Cottons

There are 61 cotton-weaving mills in Belgium, employing some 8,000 hands. 57 of the mills are situated in eastern Flanders; of the rest three are in Brabant and one in western Flanders. There are still between 2,000 and 3,000 weavers working at home, but the number of these declines from year to year.

Cotton-weaving is therefore almost confined to eastern Flanders. Ghent alone makes a large proportion of the total output, and specializes in velvets and made-up goods; Renaix, St. Nicolas, Braine-l'Alleud, Mouscron, Termonde, and Alost are minor centres, each having its own speciality. Cotton prints are especially made at Brussels and Stalle.

Linen

Linen-weaving employs some 17,000 to 18,000 hands; of these less than half are engaged in power-weaving. The two Flemish provinces, with 40 power-mills and 83 hand-mills, form the chief centre of the industry; the provinces of Antwerp, Brabant, and Hainaut come next in order. Linens were once made more at Courtrai than in any other Belgian town, and 3,000 looms still worked there in 1810, but since that time the industry has deserted Courtrai for Ghent, Alost, Roulers, Iseghem, Turnhout, Ruysbroeck, &c. Damask linen is a speciality of two very large firms at Ghent and Ruysbroeck respectively. Mixed linen and cotton stuffs are made by the same mills which make linens.

Hemp and Jute

Sackcloth and other coarse fabrics are made of these materials. Among other types of cloth are fabric for pneumatic tyres, hose-pipes, and linoleums; cloth for windmill-sails, and various upholsterers' fabrics. These textiles are made at Roulers, Eecloo, Ghent, Tamise, Hamme, and elsewhere. Upholsterers' fabrics made of jute and cotton mixed are woven at Courtrai, Deerlyck, and St. Nicolas. The whole industry occupies 1,600 hands, including 300 hand-weavers; there are eight power-mills in eastern Flanders, three in western Flanders, and two in Hainaut, and seven hand-mills fairly evenly divided between the same three provinces.

Silk

This branch of weaving is not important in Belgium. It employs about 500 hands, of whom 100 or more are hand-weavers. Deynze makes black silks; Forest makes self-colour silks, taffetas, satins, &c.; Ath, velvets and made-up silk goods, as well as upholsterers' silks, which are also made at Thielt.

Other Fabrics and Operations

Tapestries and upholstering fabrics are made chiefly at Mouscron, Courtrai, Deerlyck, Ath, and St. Nicolas. They are made of cotton, jute, and silk; generally two or more of these materials are mixed. Carpets of all kinds are made in Belgium. The so-called Flemish carpets are made at Mouscron, Herseaux, Hamme, Thourout, and Ingelmunster. Other types are made in some of the above places, and also at Brussels, Roulers, Bruges, and Malines.

Linoleum and other types of waterproofed cloths are made at Berchem (Antwerp), Cureghem-Anderlecht, and Woluwe-St. Etienne.

Bleaching, dyeing, and printing are industries of some importance, and are closely connected with the chemical industry, which supplies them with their materials. 30 factories are solely concerned with bleaching; 70 do bleaching as well as dyeing or printing. They are mostly situated in Flanders, eastern and western. Dyeing, which is done either before the material has been spun, between spinning and weaving, or after weaving, is carried out in 200 factories situated all over the industrial part of the country. Four or five factories, mostly in Brabant, are engaged in printing textiles. There are also various finishing processes which are sometimes carried out in the mills themselves, sometimes in independent establishments; of these there are about 100. In the case of carded woollens these finishing processes are complicated and extensive; in the case of many kinds of cottons and linens they are limited to simple calendering.

The chemicals used in the processes above enumerated include a very large variety of bleaching agents, vegetable pigments, mineral pigments, and synthetic dyes, and such substances as albumen, gelatine, casein, &c., to serve as ‘dressing’. These are almost all supplied by Belgian industries, except for the chemical dyes, which come mostly from Germany, and such foreign products as indigo.

CHEMICAL WORKS

The Belgian chemical industry[1] is among the largest and most flourishing of the country. While in respect of the number of persons employed and the aggregate horse-power of its steam-engines it does not take a very high place, the result is very different if the number of factories and the aggregate value of their produce is considered. This discrepancy is due to the fact that a large and important chemical factory requires a relatively small staff and little power-driven machinery.

The principal types of chemical industry may be distinguished as their products are destined for drugs and laboratory work, where a high degree of purity and homogeneity is required, or for industrial consumption, where the standard of purity is less rigorous and cheapness is a primary object. The chemical industry of Belgium belongs almost exclusively to the second division. It produces little or none of the world's supply of synthetic drugs and of chemicals for use in laboratories; almost its whole output is designed for industrial consumption. Thus the sodium sulphate of which Belgium makes great quantities is consumed by potteries and glass-works; her superphosphates are used as manure; her sulphuric acid is used in the manufacture of soap, paper, explosives, and a great variety of other articles, and so on.

These industries may be divided into four groups.

1. Sulphuric acid and superphosphate factories. These produce sulphuric, nitric, and hydrochloric acids, and sodium sulphate; ordinary superphosphate of lime, dissolved guano and basic phosphates, all artificial manures; and a number of by-products such as the

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[1] For distribution see Atlas, Map 15.

sulphates of copper and iron, sodium fluosilicate, arsenic, barium salts, &c. 53 factories belong to this group, which is scattered over the whole country.

2. Soda, chlorides, and potassium salts. These factories produce carbonate of soda and various by-products, calcium chloride, caustic soda, soda crystals, sulphurous acid and bisulphates, potash, saltpetre, refined salt, &c. There are 86 establishments of this class, the two largest being in the Sambre valley (Couillet, Jemeppe), and the rest mostly at the principal industrial towns.

3. Various other mineral products. These include aluminium and its compounds, together with hydrofluoric acid, which is required in the preparation of some of these compounds; phosphoric acid and its derivatives, mineral pigments, compressed gases, &c. There are 51 establishments of this class, mostly on a small scale.

4. Coal and wood distillation products, and other organic products. These include a great variety of chemicals, among which may be mentioned graphite, benzol, benzine, toluene, phenol, creosote, naphthaline, sal ammoniac, sodium ferrocyanide, potassium sulphocyanide (coal products), tannic extracts, salicine, methylated spirit, formaldehyde, acetone, chloroform, acetic acid, ether, nitrocellulose, collodion (wood products). Ordinary gas-works ought, chemically, to be considered in this category, but industrially they belong to a different type of establishment. There are 65 factories; the chief coal-tar works are near Charleroi and in the industrial centres of the north, while those which treat wood are mostly in the south. The works which produce chemicals of this class for laboratory and medical use are mostly at Brussels.

1. *Sulphuric Acid and Superphosphate Works*

The *sulphuric acid* industry has grown up in close connexion with zinc-smelting, a metallurgical industry in which Belgium has long held a very high place. The raw material of a sulphuric acid factory is iron pyrites or zinc-blende, especially the latter; after treatment this is handed over to the metallurgical works. Since therefore sulphuric acid is in a sense a by-product of zinc-working, these two industries are found in the closest possible connexion at two main centres, first at Liége, the old-established centre of the zinc industry, and secondly in the Campine, astride of the Dutch frontier on the waterways which connect Westphalia and the Rhine provinces with the port of Antwerp.

Of the raw materials, the Belgian works get zinc-blende especially from Spain, also from Germany (in particular the zinc-mines on the frontier between Liége and Aachen), Sweden, Sardinia, Algeria, and America. Iron pyrites is imported from Spain and Portugal. A form of pyrites containing 2–3½ per cent. of copper comes from Norway and Sweden. After grilling the blendes are sent to zinc-works, mostly in Belgium and close to the sulphuric acid works; the pyrites is sold (under the name of purple ore) to ironworks, mostly in Germany.

The output of acid, which amounts to about 300,000 tons annually, is restricted by agreement among manufacturers in order to avoid overstocking the market; as it is, the industrial product is very cheap, and is used in a very large variety of industries.

Nitric acid is made by decomposing sodium nitrate or Chile saltpetre with the help of sulphuric acid. The by-product is a mixture of neutral and acid sodium sulphate, which is taken up by glass-works and by soda-crystals factories. The Chile saltpetre is imported through Antwerp or Dunkirk; the sulphuric acid is produced in Belgium. The process requires certain stoneware receptacles, which must be of very high quality; these are usually imported from England.

The product is mostly used in the manufacture of sulphuric acid and of explosives. A fifth of the output is exported, chiefly to France, Germany, and Holland, but most factories only make it to meet their own requirements.

Hydrochloric acid and *sodium sulphate* are made by decomposing salt (sodium chloride, generally in the form of rock-salt from Germany) with the help of sulphuric acid. Sodium sulphate is principally used by glass-works; hydrochloric acid in the manufacture of acetic acid and zinc chloride, and in the treatment of bones for the extraction of gelatine. The export of these products is small.

Superphosphates of lime are chemical manures obtained by treating natural phosphates with sulphuric acid. This treatment renders the phosphates soluble in water, and therefore capable of absorption by the roots of plants.

The raw phosphates are partly found in Belgium, partly imported. Those of Liége have a purity of 48 per cent.; those of Baudour, 57–63 per cent.; those of Mons, 45–50 per cent. To these, or a mixture of them, manufacturers generally add foreign phosphates from e. g. France, Algeria, Tennessee and Florida, Japan, Aruba (West Indies), Christmas Island, &c. These foreign phosphates are generally richer than the Belgian, and give a better product.

This industry has attained a considerable scale in Belgium owing to the diffusion of scientific agricultural methods and the large available quantity of sulphuric acid. There are 33 factories, producing about 230,000 tons annually, of which about half is exported.

Similar products are bone-dust superphosphates (consisting of the residue of bones after the extraction of fat and gelatine, treated with sulphuric acid like phosphates of lime and for the same reason) and bone-black superphosphates, the raw material for which is a waste product of sugar-refineries. Dissolved guano is guano similarly treated with sulphuric acid. These products are made by one factory each. A few sea-coast factories make fish-guano.

Basic slag, a by-product of the Thomas-Gilchrist steel process, is produced in Belgium to the annual amount of 230,000 tons; almost the whole of this is taken up and ground very fine for use as a phosphoric manure.

Of the chief minor products of this group, *copper sulphate* is exported to France for use in the cultivation of vines; *iron sulphate* is used in agriculture; *arsenic* is made by two factories in the Campine and mostly exported to Germany, England, and the north of France, for use in glass-works.

2. *Soda, Chlorides, and Potassium Salts*

The *carbonate of soda* made in Belgium—and indeed elsewhere—is now almost exclusively made by the process invented by the Belgian chemist, M. Ernest Solvay.

The raw materials are rock-salt, which comes from mines owned by the Solvay Company at Varengéville (on the coast of Normandy, a few miles west of Dieppe), ammonia, which is obtained by distillation from coal, and limestone, which is calcined to give carbonic acid.

The product is used in a vast variety of industries, among which may be mentioned glass-making, glazes for pottery, paper-making, wool-washing, making rubber goods, and a number of chemical processes, such as making dextrine, glucose, ether, and guncotton, and the purification of alcohol, petroleum, benzol, &c., The bicarbonate is used for household purposes and in making powdered soaps, aerated waters, &c. A by-product is calcium chloride, which being exceedingly hygroscopic is used to absorb water out of the air ; it is also used in refrigerating machines.

Chlorine is made only for the manufacture of bleaching-powder. The output is not enough for the needs of the country, and large quantities are imported from England, France, and Germany. The raw materials are (1) slaked lime, (2) hydrochloric acid or sodium chloride (common salt), according to the process by which the chlorine is obtained.

Caustic soda is obtained chiefly by electrolytic decomposition of sodium chloride. It is mostly used in making soap, also in the manufacture of aniline dyes.

Soda crystals are bicarbonate of soda made by a process now superseded by the Solvay process, but preferred to the Solvay product for household purposes because containing a considerable percentage of water. They sometimes also contain a good deal of sulphate or bisulphate of soda. These are mixed with Solvay soda and crystallized.

Potash is made in Belgium from the waste matter of the distillation of beet-molasses and from water in which wool has been washed. Beet-refuse (*vinasses*) contains a very considerable quantity of alkaline salts, and its treatment for the extraction of these salts pays well. The wool-washings contain the fatty matter which forms about 20 per cent. of the weight of raw wool ; this matter consists mostly of potassium salts, and 100 lb. of raw wool may produce 5–7 lb. of potassium carbonate. The manufacture of potash from this source is, however, declining as wool goes more and more direct to German and French mills without passing through the washing establishments of Verviers and Hoboken.

Saltpetre (potassium nitrate) is made by decomposing potassium chloride and Chile saltpetre (sodium nitrate). The former comes from Stassfurth. The product is used for making gunpowder, in glass-works, and for pickling meat. As black powder goes out of use the manufacture of saltpetre declines.

The refining of *salt* is carried out in a large number of works, mostly small; it consists simply of solution, filtering, and evaporation.

3. *Other Mineral Products*

Sulphate of alumina is made of bauxite imported from France, and sulphate of sodium made in Belgium. It is a chemically pure product, which tends to supersede for industrial purposes *alum*, which is also made in considerable quantities, its raw materials being the alumiferous shales of Ampsin on the Meuse and alumite from Tolfa in Italy. The former product is chiefly manufactured for export to European countries, especially England; the latter for export to the east.

Aluminate of barium is made of bauxite and barytes (sulphate of barium), the latter found at Fleurus in Belgium. It is a caustic salt used in the manufacture of paper.

Phosphoric acid is made of Belgian phosphates when these are too poor to be converted into superphosphates. Florida phosphates are also used. It is especially used in the manufacture of *double superphosphates*, a rapidly-acting chemical manure made at a large factory near Liége. Other chemical manures belonging to the same group are the phosphates of potash and of ammonia.

The world's *phosphorus* supply is almost entirely produced by seven or eight large factories in France, Germany, England, and U.S.A. One small factory in Belgium supplies the needs of that country, and exports a little to the Far East.

The chief mineral pigments made in Belgium are ceruse or white lead, massicot and minium or red lead, zinc white, lithopone, ultramarine blue, and various colours with an iron base.

Ceruse (carbonate of lead) is made of lead treated with acetic acid and horse-dung. The factories are mostly in western Flanders, especially at Courtrai; half the output is exported. Other lead pigments, *massicot* and *minium*, are made in the same factories. *Zinc white* (zinc oxide, 'flake white') is made in connexion with the zinc-works of the Vieille Montagne Company. *Lithopone* is a white pigment composed of barium sulphate (barytes) and zinc sulphide, made at a factory near Louvain and exported to the extent of half the output. *Ultramarine blue* is made of kaolin (from England), sulphur (from Sicily), silica (in the form of *Kieselguhr* from Germany), and carbonate of soda (English or German preferred). Two-thirds of the output is exported.

Among the compressed gases which may be mentioned are oxygen and hydrogen, made by the 'Oxhydric' Company at Brussels by the electrolysis of water; carbonic acid, made by various methods, and sulphurous anhydride.

Here also may be noticed the following products: refined sulphur made at Antwerp, the raw material coming from Sicily and Spain; barytes, mined at Fleurus and prepared for industrial use in four establishments; and borax and boracic acid, the raw material coming from the Argentine Republic.

4. *Coal and Wood Products*

Coal products.—The Belgian gas-works take up coals with a high percentage of volatile matter (so-called gas coals) from the Couchant de Mons basin and from the Pas-de-Calais basin in France, which supply most of the Flemish establishments; German and English coals are also used when necessary.

The iron oxide (bog-ore from the Campine) used in the final purification of the gas is used as a manure, or it is treated to extract certain products, e.g. potassium ferrocyanide and Prussian blue. This industry is, however, giving way before aniline dyes.

All the ordinary products of coal-tar distillation are made in Belgium; aniline dyes have, however, not yet been much made.

Wood products.—Two important products, tannin and salicin, are obtained by the infusion of wood or bark in boiling water. The woods from which tannin is obtained come partly from Belgium (oak, chestnut) and partly from South America; salicin, on the other hand, is made from osiers grown in the basin of the Escaut. Other products are obtained by distillation.

Other vegetable products that come under the chemical industry are ether, guncotton (nitrocellulose) with its derivatives collodion, dynamite, &c., and others.

POTTERY AND KINDRED INDUSTRIES

The industries considered in this section comprise all those whose products are composed of fired clay. They include therefore not only ordinary pottery (*faïence*) and porcelain, but bricks, tiles, and pipes of porous earthenware, fireproof wares, vitrified paving-tiles, pipes, &c., stoneware and terra-cotta.

The raw material for these manufactures is abundant in Belgium. The centre of the country, from southern Flanders to the south of Limbourg province, contains a belt of clay known (from the district where it is most prominent) as *limon hesbayen* or Hesbaye brick-earth. This is an earthy brown clay, not very plastic, and unsuitable for any industry except brickmaking. It is between 4 and 15 ft. thick, and is very largely exploited by small temporary kilns where hand-made bricks are produced. These *briqueteries de campagne* establish themselves near a village, buy the clay *in situ*, and work it out in about six years. These establishments are not shown on the map (Atlas, Map 16), where the brickworks shown are all permanent establishments of some size, exploiting either Hesbaye clay or other kinds.

Another large deposit of somewhat inferior clay is the 'polder' clay (*argile des polders*), along the sea-coast. It is used in the making of bricks, which are distinguished by their yellowish colour.

The most valuable clays of Belgium are those known as *terre glaise*. These are fine clays of various kinds, of compact texture, and grey colour, often fireproof. They exist (*a*) in the Boom district, south of Antwerp on the Escaut, Rupel, and Nethe, where it is extensively worked; (*b*) in the Campine, north of the Turnhout-Antwerp canal; (*c*) south of Charleroi in several small deposits, notably at Châtelet, Presle, Acoz, and Hanzinelle; (*d*) at Andenne and at scattered sites in the neighbourhood; (*e*) at Baudour a little west of Mons.

The larger deposits of *terre glaise* are worked in extensive surface-workings. At Châtelet shafts and levels are used, the clay being found at a depth of 80–100 ft.; the same method is employed in parts of the Andenne deposit, where, however, the shafts are only 35–70 ft. deep. In the Mons district a peculiar kind of bottle-shaped shaft is used.

Minor deposits of good clay occur at Henis, near Tongres; at Sirault, near Mons (both used for roofing-tiles); at Bierghes, near Tubize, and Courtrai (used for tiles); at Baune, near La Louvière (used for stoneware), and at Bourlers near Chimay (used for fireproof wares).

The kaolin or china clay used in porcelain factories is not found in Belgium in sufficient quantities to supply the requirements of the industry; it is imported from France, being found in the neighbourhood of Limoges.

The pottery industry uses a large number of other raw materials, especially sand (obtained in Belgium in the Campine, on the coast, at Tertre, Andenne, and elsewhere) and other siliceous substances, and the materials used in glazing, colouring, &c.

Distribution of the Industry

The greatest concentration of these industries occurs along the line of the great coalfield, i. e. the Meuse, Sambre, and Haine valleys from Liége to Mons. The chief agglomeration is west of Mons, in a district just north of the 'Couchant de Mons' coalfield; its centres are Baudour, Sirault, Hautrage, Tertre, and St. Ghislain. All sorts of works exist here, notably those producing fireproof wares, pottery, strictly so called, and porcelain. A smaller group of factories lies in the Centre district about La Louvière. Another large group lies round Charleroi. Châtelet and Bouffioulx, to the south-east of that town, have a particularly large number. After another small group at Namur, the third large centre is Andenne. Farther on, smaller groups occur at Liége and Verviers.

After this great belt of pottery-works the most important areas are (*a*) round Brussels, (*b*) round Ghent, (*c*) round Boom on the right bank of the Rupel, (*d*) north-east of Turnhout, and (*e*) at Chimay and close by. Centres of minor importance are scattered up and down Flanders, especially in the north-east, and to a less degree in Brabant.

In general, the works exist in large numbers (i) wherever there are deposits of good clay, (ii) along the great coalfield, (iii) at the two great industrial centres of Brussels and Ghent. Since the best coal for the purpose is long-flame coal with a high percentage of volatile matter, which occurs in the Couchant de Mons district, the greatest development of the industry has taken place in the neighbourhood of Mons.

Brickworks

These establishments, of which Boom is the chief centre, produce bricks, tiles, and drain-pipes. Any clay will do for the rougher varieties; the better bricks must be made of comparatively pure and plastic clay, such as the blue stratum of the Boom beds. The good-quality bricks of Nieuport contain a proportion of white Silesian clay, mixed with that of the district.

The old method, followed by the *briqueteries de campagne* and most of the works round Boom, is to make the bricks by hand in the summer and to dry them in the open air, spending the winter in extracting the clay. In more up-to-date factories manual labour is superseded by steam or other power; covered drying-sheds, sometimes heated, are used, and the kilns are of the continuous type. The best-equipped works are those of the Campine district. In the Boom district the hand-workers, by the skill and rapidity with which they work, can still compete with modern machinery; pantiles, for instance, can be turned out at the rate of 200 per hour by a single workman assisted by a woman and a boy. Drying is now generally done under cover, except in the primitive *briqueteries de campagne*; artificial heating is, however, only used for fancy varieties.

The *briqueteries de campagne* fire their bricks by stacking them in masses with coal in the interstices and firing the whole; this has been replaced in the permanent factories by properly constructed kilns, either intermittent or continuous. The intermittent kilns of Boom produce two kinds of brick: *klampsteen*, fired in large kilns open to the sky, and *papesteen*, fired by long-flame coal in small vaulted kilns; the latter are the better quality. Certain factories on the coast use a kiln with three permanent walls, burning peat and coal. A further economy is effected in the modern factories by the use of continuous kilns, in which the same temperature is always kept up and the cooling-off of the fired bricks warms the air which ventilates the kiln.

The bricks produced are classified according to quality and size. The Boom pattern (7 × 3⅓ × 2½ in.) is the smallest, the Liége (9½ × 4½ × 2½ in.) the largest. Various intermediate sizes are distinguished. Of 'common' bricks the best are the Boom *papesteen*; machine-made bricks of better clay are used for facing, and are made mostly at Nieuport and Hautrage. There are also special shapes: hollow, radial, &c.

Tiles are divided into flat tiles (for covering walls, &c.) and pantiles for roofing. Special shapes are also made. There are also thick tiles for paving, kerbs, &c.

The output of bricks for all Belgium was 786,000,000 in 1897. This included 591,000,000 from the Boom district and 195,000,000 for the rest of the country. Of 71,000,000 tiles, 36,000,000 came from Boom; and of 27,000,000 paving-tiles 22·5 million were made in the Boom district.

The export trade in these products, especially to Germany and France, and in a less degree to Holland and England, is considerable.

The shale found between the seams of coal-measures has recently been used as material for making bricks, which are compressed and fired, and fetch a good price, being considered equal to the best machine-made products. They are made at Liége and in the immediate neighbourhood (Jemeppe, Ans).

Fireproof Wares

These are wares made with very pure clay and capable of resisting high temperatures. They are mostly used for industrial purposes, e. g. retorts, furnaces, crucibles, &c. The works are widespread in Belgium, especially west of Mons, round Charleroi, at Andenne, and in the north-east of Flanders. The clay comes especially from Andenne and its neighbourhood, from the Baudour deposit near Mons, and to a less degree from the deposits south of Charleroi. Its distinctive quality is the almost complete absence of iron, lime, and magnesium. Imported clays from Normandy and the Rhine are also used, mixed with Belgian clay, for glass-working and metallurgical crucibles respectively. White sand, flint, or quartzite quarry-refuse, together with calcined clay, is mixed with the clay to prevent excessive shrinkage in the firing. Other substances, such as magnesium from Germany or Austria, dolomite (Belgium), bauxite (France), plumbago (Ceylon), carborundum (Germany), &c., are used for special classes of goods.

The various processes include pounding, mixing, shaping by hand or machine, drying, which must be done very slowly, and lasts five or six months, and firing, which is mostly done in intermittent kilns fired with long-flame coal, but some large factories use continuous kilns.

The products are distinguished chemically according to their chemical properties (e. g. basic bricks, for lining Thomas-Gilchrist converters, carboniferous crucibles, for fusing metals), or commercially according to their form (bricks, crucibles, retorts, pipes, &c.).

It should be observed that glass-working crucibles do not appear on the market; every glass-works prefers to make its own crucibles.

The most important home buyers of fireproof goods are the iron and steel-works. There is also a considerable export to France, Russia, Germany, &c.

Vitrified Tiles, &c.

The wares in this fabric consist mostly of paving materials and tiles glazed or unglazed. The clay used is that of Baudour, and this is the chief seat of the industry; the clays of the Charleroi and Chimay districts are also used. The special characteristic of the fabric is the complete absence of porosity due to the vitrification of the clay. To ensure this it is necessary (except in the case of certain German felspathic clays) to add to the clay a proportion either of blast-furnace slag or of a felspathic rock such as the eurite of Nivelles and Gembloux or the chinastone of the Palatinate.

The chief products are factory tiles, paving-blocks for sidewalks (*pavés de Quaregnon*), fine quality tiles (known as Sarreguemines tiles), and ornamented tiles. Most of these are consumed in Belgium; only the Sarreguemines tiles have any considerable export. The glazed wares in this fabric are only made by a few factories which specialize in fancy bricks (e. g. at La Louvière, Hemixem, Hasselt, Ramscapelle, &c.).

Common Stoneware

These wares include apparatus for chemical works, made in the fireproof pottery works at Andenne, domestic utensils, such as jugs and jars and (especially) sewer-pipes, traps, and sanitary appliances generally, made chiefly at Bouffioulx and Châtelet. These places also produce the clay. A certain amount of finer clay comes from Germany. The finished articles are generally glazed; the ware is distinguished from common earthenware by being vitrified. Firing is done with long-flame coal or briquettes of bituminous coal. The chemical apparatus is almost all exported, especially to France and Italy; England and Germany are the chief competitors of Belgium. The Belgian market for sanitary appliances is shared by English and Belgian goods.

Terra-cotta

This class contains porous earthenware fabrics other than those (bricks, tiles, and pipes) used in construction. It includes, therefore, flower-pots, kitchen and domestic vessels, vases, &c.; these may be unglazed or glazed, and may have decorations in colour, e. g. majolica. The flower-pots are made of coarse clay, e. g. that of Tamise and Thielrode, which bakes to an attractive colour; the kitchen ware is generally made of a more or less fireproof clay, e. g. from Châtelet, Andenne, or Sirault. The clay for majolica and art pottery comes from Holland, Germany, and France.

The articles are fired in small rectangular kilns by direct flame. Flower-pots are thus made all over the country; the other varieties are more localized, e. g. the Flemish art pottery of Courtrai, Ostende, Thourout, and Bruges, the majolica of Tubize and Saventhem, the reproductions of Tanagra statuettes at Courtrai, religious statuettes and plaques at Ghent and elsewhere, &c.

These artistic products are chiefly exported, especially to England, the United States, and Canada, as well as France and Germany. Of the common earthenware goods large quantities are imported from France (Givet and Paris), Holland (Gouda), and especially Germany; this importation has damaged the Belgian industries, especially at Andenne, Nimy (Mons), Ghent, and elsewhere.

Pottery (*Faïence*)

Pottery, properly so called, is a porous ware distinguished from terra-cotta by the fineness of its materials and the care with which it is prepared. The class most commonly made in Belgium is the felspathic or English variety, a hardware with white or grey paste.

The clay is generally a mixture of (i) English or, less commonly, German (Coblenz) 'ball clay', or sometimes when a yellowish tint is required the ferruginous clays of Baudour and other Belgian sites; (ii) kaolin or china-clay from England (an inferior kaolin is extracted from a sand found near Morialmé, between the Sambre and Meuse); (iii) pegmatite or china-stone (a natural mixture of felspar and quartz) from England, for which is sometimes substituted felspar, English or Norwegian; (iv) flint, which is imported ready calcined and pulverized from the neighbourhood of Dieppe. The materials of the glaze include various chemicals made in Belgium, but many small manufacturers buy their glaze ready made up in England. The colouring-matters—mostly metallic oxides—are imported from Germany, France, and England.

The above conditions, which obtained in 1907, may since then have been slightly modified in accordance with certain general developments of trade in Belgium; thus the dependence on England may have decreased, while the dependence upon Germany and upon home-made products may have increased in proportion.

The chief products are household crockery, sanitary fittings, and tiles. Tiles are largely exported, especially to Holland, Sweden, and Norway, but there is also a large import, and of the other products there is little export and large imports, especially from Holland, Germany, and the United Kingdom.

Porcelain

Porcelain is a ware made of kaolin, and fired at a temperature which vitrifies the paste and thus produces its characteristic translucency and brittleness. The raw material of the Belgian industry (localized at Brussels and Baudour) is imported ready prepared from Saint-Irieux, near Limoges in France; felspar for the glaze is imported from Norway. The chief products include, beside household wares, insulators of all kinds for electric installations, articles for chemical and industrial purposes such as photographic dishes, mortars, &c.; and a great variety of minor and fancy articles.

More than a third of the total output is exported, especially to England and Holland. One factory at Baudour sends insulators to almost every country in the world. There is also a very large import, larger than the whole output; it comes chiefly from Germany.

GLASS

The manufacture of glass is in Belgium a large and growing industry. The last detailed survey dates from 1906; the employés of the industry had in that year increased by 50 per cent. since 1896, and the number of factories by 40 per cent., while the quantity of steam-power employed had doubled. This increase especially affected the manufacture of crystal, table-glass, and mirrors.

Distribution of the Industry[1]

The industry is chiefly localized about Charleroi, half the factories being situated in the neighbourhood of that town; of the rest a third are in the neighbouring *arrondissement* of Namur and rather fewer in that of Mons. A minor centre of the industry is at Liége, and a few isolated factories (in addition to numerous works which use glass as their raw material) are found at Antwerp, Brussels, &c. By far the largest number of glass-works are thus situated on the line of the great coalfield, Charleroi being the point at which they are densest, while from this point they become less frequent to east and west. The industrial centres of Antwerp and Brussels have attracted a few works away from their natural position on the coalfield, but this is a development of recent years only, and the industrial area around Ghent has remained untouched by the glass-manufacturing industry. It may consequently be said that the geographical distribution of glass-works is dictated almost exclusively by coal-supply. For this reason it is practically certain that when the Campine coalfield begins producing there will be a great growth of glass-works in north-east Belgium. This will be enhanced by two factors: (i) glass-works require long-flame coals, and in these the Campine field is especially rich; (ii) the sand used by the Belgian glass-works comes largely from the Campine and would be procurable on the spot. It must, however, be observed that glass-working is a highly-skilled industry, to which a section of the population in Hainaut has long been accustomed; this fact makes it difficult to initiate glass-works in a new district, and gives an unusual stability to the distribution of the industry. It would also increase the difficulty which all industries would find in recovering from the effects of the German occupation. The glass industry is in fact a striking example of a long-established institution whose growth has in the main been gradual though steady ever since the foundation of the great Val-Saint-Lambert crystal-factory in the early nineteenth century. Most of the factories are large establishments with 200–500 employés or even more (one has over 3,000), and hardly any have fewer than 100.

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[1] Atlas, Map 17.

Raw Materials

Glass is composed of silica, in combination with soda, potash, lime, or lead oxide. Of these four alternatives most kinds of glass generally contain two; thus in window-glass the silica is combined with soda and lime, in crystal with potash and lead oxide, &c. The details of the composition vary greatly, and in many kinds of glass other ingredients (e. g. magnesia, alumina) are present in small quantities.

Raw silica is obtained in the form of sand. The best sand is white; that used for crystal-glass must be extremely pure, and the Belgian crystal-works get this from Fontainebleau. The fineness of the sand is also important, with a view to rapid fusion in the crucible. For mirrors, good window-glass, and the best table-glass and bottles, white Campine sand is used; this is, in purity, not much inferior to Fontainebleau sand. Some table-glass factories near the German frontier get sand from Nievelstein near Herzogenrath. Belgian sands other than that of the Campine are obtained at Oret, Wanze, Naninne, Tilly, Havré, Binche, Braine-l'Alleud, and elsewhere. All the above sands are of sufficient purity to be used in the manufacture of transparent glass; for bottles, &c., where clearness is not required a certain proportion of iron, imparting a green or brown-green colour, is not a disadvantage, and is indeed useful as increasing the fusibility and plasticity of the glass, and making it therefore easier to blow. Cheap ferruginous sands from Mont-Saint-Guibert and Braine-l'Alleud are therefore preferred for bottle-glass. The respective cost of these sands may be compared from the following table:-

Type of sand.	*Local price (francs per ton).*	*Price at the Belgian factories (francs per ton).*
Fontainebleau . .	2·50	7–8
Campine (first quality) .	1·50	4·50–5·50
Campine (second quality)	1	3–3·50
Nievelstein . . .	4·50	7
Other Belgian sands .	—	on average 3·50–5·50
Ferruginous sands[1] .	0·70–1·20	2–3

The soda (sodium carbonate or sulphate, according to the quality of glass required) and potash (potassium carbonate) are supplied by the Belgian chemical industry; the lime, which is used in the manufacture of all kinds of glass with the exception of crystal, takes in general the form of calcium carbonate, and is derived from the limestones of Andenne, Naninne, Landélies, Montignies, Couvin, and Mariembourg. The lead oxide or minium used for crystal-glass must be exceedingly pure, and is accordingly made by the glass-works themselves.

The reducing agents most in use are charcoal and coke; a number of bleaching agents are used, mostly chemicals made in Belgium.

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[1] These ferruginous sands are used after they have already been employed in polishing plate-glass, so that their cost as a raw material for bottle-glass is much lower than appears from the table. They are practically a waste product of the plate-glass industry.

For polishing and cutting the glass the substances most used are the hard ferruginous sand mentioned above, and emery, which comes from the Greek island of Naxos or from Turkey, and is generally prepared in Germany.

A large number of materials are required for such processes as engraving, colouring, gilding, silvering mirrors, sensitizing photographic plates, &c.; also various accessories such as crucibles and other articles in fireproof pottery, made by the glass-works themselves; coal, of which great quantities are required, especially long-flame and gas coal, together with briquettes for use in annealing-furnaces, and packing materials.

PAPER-MILLS

Distribution[1]

The distribution of the paper industry in Belgium is somewhat unlike that of most other industries. The raw material and the product are alike bulky, so that mills ought to be well situated on lines of communication; but on the other hand they are imperishable and easy to handle, so that little would be gained by concentrating the mills at or near a great port. Distances are in fact so small and communications so good in Belgium that easy transport of raw materials and finished goods would be secured to a mill placed almost anywhere in the central plains of the country.

For the same reason the question of coal-supply exercises little influence on the localization of the industry. Steam-power is preferable to water-power on account of the extreme regularity and accuracy necessary in the movement of the machines; but coal in the moderate quantity required can be had at little extra cost in almost any part of Belgium.

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[1] Atlas, Map 17.

The two really important factors are cleanliness and water-supply. Large quantities of fresh water are indispensable for a paper-mill, and this is a strong objection to placing such establishments in the north—Antwerp, Flanders, and as far south as Brussels—because in these parts the sluggish rivers are already fouled with the refuse of towns and factories, and would require purification before they could be used in paper-mills. The water, moreover, must be free from certain mineral salts, especially those of iron. Secondly, paper-mills demand a degree of purity in the atmosphere. Paper cannot satisfactorily be made in a black country; the mills are best scattered in a comparatively rural district where the air, as well as the water, is untainted.

These conditions point to two districts in Belgium as conspicuously suitable for the growth of the industry, namely the Ardennes and Brabant.

South of Brussels, in the upper basin of the Senne, and extending as far south as Nivelles, is a district consisting of a high undulating plateau, agricultural in character, and only having factories in a few of the larger places. The population is of low density and the towns small. The whole plateau is intersected by somewhat deep river-valleys, running north and carrying down a considerable body of water, not yet contaminated, since these rivers have their sources in the district itself or very little to south of it. Finally the communications are good; the district lies midway between Brussels and Charleroi, two intensely industrialized areas only thirty miles apart, and connected by one of the chief canals of the country. This region is the centre of the Belgian paper industry.

The Ardennes, equally well supplied with water and still more removed from atmospheric impurities, are less favourably situated as regards communications. Wood-pulp is indeed procurable on the spot, and in the extreme north of the district the Meuse provides good and easy access. A secondary group of paper-mills has accordingly grown up at Huy and Andenne, and outliers are to be found in remoter parts of the hill district.

Finally there are mills outside these two areas at Ghent and Bruges, and a few north of Brussels, in spite of less favourable conditions, and a small group in the Dendre valley about Grammont may be said to belong to the Brabant district.

It is improbable that the development of the Campine coalfield will do much to affect the distribution of the industry. The conversion of the Campine into a 'black country' will tell against the development of paper-making, and the water-supply, though copious, is less good in quality than that of Brabant. On the other hand, communications are excellent, and a group of paper-mills situated in the Campine would be favourably placed between the Rhine—an important source of wood-pulp—and the port of Antwerp.

Raw Materials

These fall into two groups: the vegetable materials which constitute the fabric of the paper, and the chemicals with which they are treated. Of the vegetable materials the most important are rags, straw and esparto-grass, and wood-pulp. Wood is now by far the most important raw material. Soft resinous timbers are most employed; they are obtained chiefly from Sweden and Norway. Russia, Finland, and Canada also supply timber to Belgium for this purpose. At present the wood is mostly pulped or half-pulped before export, but some Belgian factories receive it in the solid state and pulp it themselves, one even making pulp for export, using for this purpose the waste of Canadian poplar and aspen which they get from *sabot*-makers in eastern Flanders.

Wood-pulps are divided into three classes. Mechanical pulp is made by cutting the wood into billets a foot long, which are carefully freed of bark and knots, and reduced to pulp in a mill. This is used for newspapers; it is coarse and cheap, and the paper does not last. Chemical pulp is made by boiling the wood with either caustic soda, sodium sulphate, or bisulphite of lime or magnesia, after it has been reduced to fragments of a proper size. These processes produce a better-quality pulp. Steam-pulp is prepared by treating the wood with steam at high pressure, a process much used in Norway and Sweden, but not much in Belgium. Chemical pulps are much imported from Germany; these are considered to be of specially good quality, being the produce of scientifically cultivated forests.

Of the chemicals used in this industry the most important are bleaching agents; chloride of lime, of Belgian origin, is generally used.

All the machines used in Belgian paper-mills are made in the country. Certain firms have given especial attention to the type of steam-engine required by this industry.

Industries Consuming Paper

Almost all paper passes through establishments of this kind before reaching the true consumer. Thus some firms treat paper with preparations which make it waterproof, grease-proof, &c., or sensitive to light, or convert it into glass-paper or emery-paper. Another type of industry is the colouring and printing of papers for purposes of ornament, including such industries as wall-paper and playing-cards. The preparation of writing-paper is a large industry by itself, so is the making of paper-bags and other receptacles. There are factories which make boxes and other objects of cardboard, and finally, paper fancy-goods (frills, confetti, artificial flowers, &c.) are much made. These industries are not here treated in detail, and are not plotted on the maps; they are carried on for the most part in small factories situated in all the chief towns, notably Brussels and its suburbs, Antwerp and the neighbouring towns, and Ghent.

The Diamond Industry of Antwerp

The diamond industry is one of the richest and most exclusive trades in existence, and cannot be omitted in any survey of Belgian industries. In Europe the industry is confined to Antwerp and Amsterdam, and the modern industry of Antwerp, though it only dates from after the foundation of the independent kingdom of Belgium, now equals, if it does not surpass, that of Amsterdam. At one time it seemed probable that the whole European industry might be supplanted by that of the United States, which was founded by immigrant workmen from Antwerp and Amsterdam, but the migration appears to have declined in recent years, and the American industry is no longer expected to supersede the European.

The industry demands a high degree of skill, and the wages are in consequence high, especially in comparison with the average Belgian rates. Cutters receive from £2 8*s*. to £3 4*s*. per week, cleavers (i.e. the highly skilled men who divide the crude stones, according to the grain of the crystal, into the flat plates from which 'rose' diamonds are made) £4 and upwards, and sorters, £1 5*s*. to £2.

There are between thirty-five and forty large manufacturers who have factories at Antwerp, as well as numerous diamond merchants and agents. The workmen employed in all branches of the industry number from 4,000 to 4,500, including about 70 women. Apprentices are instructed for a year before they are considered sufficiently skilled to become regular workers, when they begin at a weekly wage of £1 4*s.* to £1 12*s.* The introduction of these apprentices at first caused great discontent among the regular workers, which resulted in a strike, after which the workmen agreed to the introduction of apprentices on condition that the hours of labour were reduced and wages raised by as much as 25 per cent. on the average. Before this time an agreement was in force by which no new hands were to be taken on except on the motion of the workmen themselves, in which cases the workmen generally nominated members of their own families.

The raw material of the diamond industry consists of stones coming chiefly from South African mines. These reach the country by way of London. Diamonds are also imported from Brazil; these are chiefly bought in Paris. The principal countries to which stones are exported are the United States, Russia, Turkey, the United Kingdom, and Germany. Different types of stones are prepared for these various markets; thus yellow diamonds are especially in request in Russia and Turkey.

The main difference between the industries of Antwerp and Amsterdam is that whereas the latter town specializes in small brilliants, Antwerp specializes in large stones, particularly the rose diamonds known as ‘roses d’Anvers’.

HOME INDUSTRIES

This term is capable of bearing two meanings. It may refer to the occupation of an independent artisan who works at home and disposes of his output in the market or sells it to customers of his own, or to that of a person working at home for a definite employer, who, as a rule, supplies the raw material and sells the produce. The first of these represented the normal condition of the Flemish weaver (for instance) till about 1840. He bought his flax and sold his linen on the market at Courtrai or Ghent, and worked according to his own methods and at his own convenience. But this system broke down in face of the competition of France, Spain, and English firms established in Belgium. The isolated weaver could no longer maintain his position in a market which demanded novelties, because he could not get in touch with the needs of the consumer. The home weavers therefore drifted under the control of persons who directed their work with a view to the requirements of the market, and these naturally tended to supply the raw material and pay the weaver for piecework alone. These tendencies represent the change from the first meaning of the term to the second, which is the only one of much importance at present, and is alone here considered.

The same transition which we have indicated as occurring in the textile industry naturally took place in a large number of other trades, such as the Liége arms industry, the woollens industry, the Binche tailoring trade, &c. In some cases the transition took place as early as the seventeenth century; in most it was during the nineteenth century.

Home industries, in the sense laid down, form a very important feature of Belgian industrial life, and occupy one-seventh of the whole working population. Lace-making is the largest; next comes tailoring, then linen-weaving, boot-making, the manufacture of gloves and fire-arms, and woollen and cotton-weaving; and after this a large number of minor trades. For the most part, however, they show a steady and sometimes rapid decline in the number of persons occupied. Boot-making shows a rise, but this is exceptional. The younger generation prefers working in the factory, as being more remunerative; in fact the great prevalence of home industry in Belgium is a survival of a régime that is in process of disappearing. The factory system was established much later and much more gradually in Belgium than in England. It has still a much weaker hold on the population, whose leanings to a life on the land have never been so thoroughly eradicated as in our towns, and are expressed and fostered by the plot of ground which almost every Belgian owns or at least cultivates. It has been said that all home-workers in Belgium remain at bottom agriculturists, and return to the soil whenever they get the chance. Certainly they mostly spend a good deal of time on the land, either on their own plots or working for others at harvest, fruit-picking, &c.

These home industries are therefore not comparable with the sweated industries of England. The wages are low, but in general not so low (in comparison with the general standard of wages in Belgium) as to be called sweated. Thus a tailor, with some help from his wife, may make 24*s.* or even 32*s.* a week; though this is an unusually high figure, and tailoring is a fairly well-paid occupation. Shoemakers earn about 2*s.* 5*d.* a day, cutlers and nail-makers about 1*s.* 9*d.*; the worst trade is the Flemish lace-making, which brings in 10*d.* a day, or less than a penny an hour. Glove-making is in very much the same condition. Generally speaking there are two types of home industry: those in which the workers mostly depend entirely on their labour, and those in which the earnings are only a supplement to the family income. Men's labour falls mostly into the first class, women's and children's into the second. In the first class wages are below the factory standard, because of the lack of combination among the workers for the defence of their interests, and also because of the somewhat lower average level of efficiency in home labour, but they cannot fall very greatly below this standard. In the second class, on the other hand, there is no theoretical limit to the possible reduction of wages, and sweated labour is common. The truck-system was abolished by the law of 1887, but still flourishes in these regions, in a more or less disguised form, and gives rise to serious abuses. The law forbidding the industrial employment of children under twelve is also systematically evaded, and the apprentice system affords a fertile field for abuses.

History of Belgian Industry

It is not proposed in this section to go into the great industrial history of the Southern Netherlands in the Middle Ages and the succeeding centuries. In order to understand in some degree the present industrial position of the country it will be enough to go back to the eighteenth century, and the slightest outline sketch is alone here possible.

At this time Belgium was a prosperous agricultural country, whose industries, although they existed and indeed flourished, were strictly limited by certain conditions. They were for the most part rural home industries of the primitive type, i. e. industries in which the producer acts also as independent merchant, and carried on in many cases by people whose main occupation lay elsewhere.

The famous Flemish and Limbourg textiles, the stockings of Hainaut, the lace of Flanders, the nails, guns, and other ironwork of the Liége district, were all made by people whose life was fundamentally agricultural, and who worked at these trades mostly in the winter. An iron forge, worked by ten men, would employ perhaps 100 charcoal-burners, who worked for the forge only during the winter, being occupied in agricultural work the rest of the year. There was thus no really industrial population, or rather the industrial personnel was for the most part only semi-industrial, and included only a small minority of workers whose whole time was devoted to their trade.

It may be useful to summarize the state of the chief manufactures at the end of the eighteenth century. In 1800 there were some 22,000 linen-weavers and 110,000 linen-thread spinners in East Flanders; these were only part-time workers, the weavers being farmers thus occupying the winter months, and the spinners mostly women employing their leisure time. In West Flanders the number was about the same. The cloth-weavers, on the other hand, had by 1800 already lost their economic independence and taken on the character of home-workers in the second sense; they worked for employers, and did not either buy the material or sell the goods. This industry, after the decay of cloth-weaving in Flanders and Brabant (seventeenth century), had moved to Limbourg, where it was practised by farming people during the winter evenings. The merchants, wool-washers, dyers, fullers, and finishers alone lived in the town; the 30,000 weavers lived in the villages, with Verviers and Eupen as their centres. The main industry of the Hainaut peasantry was stocking-making, the stockings being sold by them to tradesmen. Lace-making was a very flourishing industry in the eighteenth century, but at this time it had greatly declined, and the condition of the lacemakers was very miserable. The industry recovered somewhat under the Directoire, but never again flourished as it did in the great days of the French court. Straw hats were made, as a winter occupation, by the peasants of the Liége district. Of metallurgical industries, nail-making employed 15,000 men in the winter, especially round Charleroi, Fontaine-l'Évêque, and Liége. In the Liége district the nail-makers formed an association for the buying of iron and the sale of nails, but elsewhere there was no co-operation of any kind. The arms industry was scattered up and down the country round Liége; it had already lost its original character, and by now the workmen were definitely employed by *patrons*. The blast-furnaces and forges of the iron trade only employed 8,000 men, of whom the great majority were charcoal-burners only working a few months in the year. Eighteen establishments were situated in the *département* of the Ourthe; one employed 100 men, but most only half a dozen or so, except for the charcoal-burners. Coal-mining was mostly done by quite small groups of miners, organized by a master-collier, whose office generally ran in a family. Only here and there in the Couchant de Mons was there any marked differentiation between the directors and the workmen.

In the towns there was no great amount of manufacture. The textiles of Brussels had completely disappeared from the world's market; at Antwerp silk-weaving occupied 1,400 weavers and 4,000 other hands; Louvain was famous for its beer; Tournai for tapestry, carpets, and porcelain, and Bruges for its lace. At Ghent there was practically no industry at all.

In this state of things the industrial revolution first began to affect Belgium. The general rise of populations which took place in the later eighteenth century (from 1781 to 1804 the population of Flanders rose 27 per cent., between 1801 and 1816 12 per cent., and between 1816 and 1826 17 per cent.) caused a rise of prices and an urgent necessity for increasing production. In the case of coal-mines, for instance, this operated by making it necessary to go to lower levels and therefore to install pumping-machinery. The capital for this plant could not be raised by the old corporations of miners, but its necessity became more and more obvious as the forests became exhausted. As a result, Newcomen pumping-engines came into general use in the latter part of the eighteenth century, and with their appearance the old type of organization disappeared. No such pressing need existed in the textile market, where the weavers increased naturally with the increase of the population; and when, about 1805–10, steam haulage engines were already coming into use in collieries, the weaving industry was still untouched by the movement. Metallurgy, on the other hand, was seriously threatened by the shortage of timber, as blast-furnaces could not be worked without great quantities of charcoal, and the problem of smelting iron with coke was solved, after many years of effort and experiment, in 1823. By this time the textile industry was also expanding rapidly, for the French occupation had resulted in a brisk demand for Belgian goods to clothe the French armies, and the weavers could not produce enough. The first mule-jenny for spinning cotton was set up in Ghent in 1801, and from that event dates the whole modern history of Ghent, which immediately began to develop a gigantic cotton industry. By 1810 it employed 10,000 hands. Woollen spinning-mills were set up at about the same time (the first at Verviers, 1800), and power-looms first in 1805. Linen-spinning, on the other hand, was still done by hand; the experiments of this period did not lead to the discovery of the right methods of power-spinning. Napoleon offered a million francs for such a discovery in 1810, but it was never claimed.

The French occupation was the turning-point in the economic life of Belgium. By creating a large and brisk market it compelled the Belgian manufacturers to improve and increase their output, and Napoleon's fiscal system acted protectively upon all the growing industries. All industries were stimulated to new life, and they were at first proportionately depressed by the union with Holland. The cotton industry suffered severely; many spinners and weavers migrated to France, where Roubaix, Tourcoing, and Havre were already prosperous manufacturing towns, and only too eager to acquire Belgian skilled labour. Only by about 1822 did the Ghent cotton trade recover, by dint of acquiring the market of the Dutch Indies. There was also a certain internal trade with the rest of Holland. Populations were everywhere steadily and rapidly increasing, and a market was practically assured for any industry that could adapt itself to new requirements.

Collieries continued to improve their plant by the substitution of Watt for Newcomen pumping-engines (the first in 1819), and metallurgy underwent a complete revolution in 1824 by the first successful use of coke in the blast-furnace. From this time dates the rise of the great ironworks of Charleroi. An industry especially benefited by the union was bottle-making, owing to the new export of Dutch gin from Antwerp. The linen industry, in spite of the competition of English machine-made linens, prospered; its market, like that of the cotton-mills, was the Dutch Indies.

In 1830 came the separation from Holland. All the Belgian industries immediately suffered, and in many cases did not soon recover, from the loss of their chief markets. Belgian coal no longer supplied the whole of Holland; Belgian bottles were no longer required by Dutch distilleries; Belgian textiles were no longer exported to the Dutch Indies. The productivity of Ghent fell by 30 per cent. in five years. External markets in Europe were practically closed by tariffs. In 1849 it was said that Belgium's external commerce was in danger of extinction.

From this danger Belgium was rescued by the development of her own internal market. At the end of the eighteenth century her system of communications had been exceedingly bad, and it became necessary to reorganize them. In 1833 a law was passed authorizing the construction of a large system of railways, and the immediate result was a stimulus to the metallurgical and mechanical construction industries. The number of coke-fed blast-furnaces rose from one in 1829 to eight in 1838, and coal-mining underwent a parallel development.

The cotton-mills were going through a very hard period during the thirties. Hands were always out of work, and manufacturers always in difficulties. It was only gradually, as the other industries settled down to the new conditions, that the home market became able to support them, and thus by degrees they acquired an even greater prosperity than before, though working for the home market only.

Thus by the middle of the nineteenth century Belgium was already an industrial country, but it was passing through a time of crisis in adjusting its manufactures to its own needs and to the absence of any considerable foreign market. By 1850 this adjustment had been tolerably well effected in the case of metallurgy, but was still far from complete in the textile industries, which were by far the most important branch of manufacture. Moreover, Belgium was still quite definitely agricultural to an extent which she is not now. The basis of her economic life lay entirely in agriculture, which still employed the majority of her population and indeed occupied then, even more than now, much of the time of industrial workers. The general lines of development since 1850 may be sketched as follows.

During the second half of the nineteenth century the whole population increased by 50 per cent., the industrial population by 66 per cent. Not only did the relative importance of industry increase, but its character largely changed.

Coal-mining acquired the first place among the national industries, and became the centre round which they all turned. Not only did it employ the largest number of workmen, but it attracted to itself factories of all other kinds, notably metallurgical. This supremacy of coal was not quickly asserted. In 1837 there were still 66 charcoal-fed blast-furnaces and only 37 coke-fed; and the former only disappeared slowly as a consequence of the increasing shortage of timber. Thus the province of Namur, with 500 square miles of forest, could only, during the forties, furnish two-thirds of the charcoal needed by its ironworks, which had to supply themselves at great and increasing expense from Luxemburg; the *banne* of charcoal (1¼ ton) went up in 1849 from a normal price of 45 francs to 80 and 85 francs. Consequently, when the huge ironworks recently set up by the new and properly-capitalized companies had demonstrated the practical value of coke-smelting, the charcoal process soon disappeared. In the same way and for the same reason coal came into use in glass-works and other factories.

At the same time a great development in the ore trade took place. In 1835 Belgium imported no ore; in 1904 her imports of ore amounted to 125,000,000 francs. For remarks about the attempt to develop a home-supply of iron-ore, and its failure in the seventies, see p. 408. The metallurgy of modern Belgium, like her textile industry, sells primarily in the home market, but it buys almost exclusively abroad.

Another important development was in the scale of establishments. In 1850 Belgium was still a country of small industries; 40 per cent. of her total industrial population consisted of heads of establishments or independent workmen. At present 60 per cent. of the working-class is employed in large factories containing anything from 50 to over 1,000 workmen. At the same time the use of steam and other power vastly increased, an increase which has gathered impetus continually, and has never been so rapid as during the last ten or twenty years. Finally, there has been a continual rise in the proportion of the total manufacture in the hands of companies as opposed to private persons. Many of the leading industries include to-day not a single establishment owned in any other way than by a company.

The tendency to eliminate the home-worker—for such a tendency, however slowly it operates, does clearly exist—has been described in the preceding section. A parallel tendency is the elimination of the independent workman such as the old-fashioned carpenter, tanner, miller, rope-maker, tailor, baker, &c. This tendency is now only in process of operation; it is identical with the tendency which, about the middle of the nineteenth century, superseded the individual linen-weaver by the power-loom. It is inevitable that these independent workmen should disappear more or less completely as the factory takes over their work, and their continued existence can only be (as it was in the case of the linen-weavers) an increasingly difficult struggle against overwhelming odds.

PART II. FRANCE

Industrial Survey of the French Area

Maritime Plain and Flanders.—Apart from its position as a port, the interest of Calais consists almost exclusively in its extensive manufacture of tulle or imitation lace. This flourishing trade was established by Englishmen about 1815, the necessary machines having previously been a monopoly of Nottingham. The industry is remarkable for the high level of wages, which sometimes reach £4 or £6 a week.

Dunkirk is primarily a port, and under this head is considered again in Chapter X. Its industry is mostly subsidiary to the requirements of the port, and consists of saw-mills, rope-factories, establishments for weaving sailcloth and making sails, oil-factories, and petroleum refineries, &c.; also large jute and cotton-mills.

There is a good deal of coastwise fishing. Calais is a more important centre for this than Dunkirk, which, however, is the base of the Iceland fishing-fleet, a large but declining industry.

In French Flanders there are practically no industries except such as are carried on in the large farms. These are often well equipped with sugar-making and distilling plant, and lace is everywhere made, Bailleul being the chief centre. Otherwise there is no industry till the valley of the Lys is reached and the Lille region is entered.

The Lille District.—Certain portions of the Mélantois, Ferrain, and Weppes form an industrial region of the very highest importance, whose chief centres are Lille, Roubaix, Tourcoing, and Armentières.

This is primarily a textile district. Lille, with its numerous and large manufacturing suburbs, employs over 20,000 hands in spinning linen thread; 12,000 of these are employed in about sixty mills entirely devoted to linen-spinning. A good deal of table and other linen is also woven at Lille, but this industry belongs especially to Armentières. 3,000 hands are employed in twisting mills, which make all kinds of linen sewing thread. Cotton-spinning is also a great industry at Lille; there are thirty mills, which produce cotton thread, spun or twisted, for various purposes. Part of their output is taken up by about ten factories of tulle and other cotton fabrics. The flax spinning-mills are especially concentrated in the Wazemmes quarter, and their *personnel* is largely Belgian, as is the case with a great many factories in this district.

The industries at Lille which depend immediately upon the cotton and linen-mills have developed to a very considerable extent. Among these may be mentioned the clothing industry; the making of bobbins for thread; bleaching and dyeing, which in turn have given rise to very large chemical works, especially at La Madeleine, Loos, and Croix, and to several ceruse and ultramarine factories (the most important establishment, the *manufacture des produits chimiques du Nord*, has three factories and an annual balance sheet of 7,000,000 francs); boiler-making and machine-construction, which occupy some seventy factories and 10,000 hands, locally known as *noirs*. The factory of Fives-Lille, e.g. makes bridges and girder constructions, railway stock, and apparatus for sugar-works, distilleries, and other industrial establishments, and employs 2,000 hands; the neighbouring works of the Compagnie du Nord, in the *commune* of

Hellemmes, employ 1,200 hands in the construction and repair of locomotives and other rolling-stock. Oil-factories are also important, and there are numbers of breweries, for Lille is an almost exclusively beer-drinking town. There are many other industries, e.g. pottery, glass-works.

But although Lille is the first manufacturing town of northern France, it is not so completely industrialized in appearance as many of its neighbours, e.g. Roubaix and Tourcoing on the east, Lens and Béthune on the west, Anzin and Denain on the south. It is a historic city with a large middle-class population, flourishing trade, university life, &c., and in the city itself there are hardly any factories. These are all concentrated on the outskirts of Lille and in its great suburbs. As a trade centre, dealing in grain, flax, oils, alcohol, sugar, coal, cotton, and wool, cloth, machinery, and chemical products, Lille makes its influence felt over the whole of France.

The industrial development of the Ferrain is entirely modern. Formerly it was a fertile district, but standing apart from the waterways of the Deule, Lys, and Escaut, and untouched by their traffic. When coal was discovered at Anzin (near Valenciennes), however, the immense industrial expansion which immediately resulted took place not in the coalfield itself nor yet in any of the large industrial towns (Lille, Aire, Arras, Douai, Cambrai, Valenciennes, &c.) of the neighbourhood, but in the Ferrain, where previously there had only been small villages, agricultural suburbs of Lille, with quite small factories.

This is to be explained by the fact that the great towns, owing to their character of fortresses, were quite unable to meet the demand for a sudden expansion, and in consequence the expansion necessarily took place in a rural district where there was (*a*) a fairly dense population (which indicated a site in Flanders rather than farther south), and (*b*) some previous industrial development to serve as a nucleus for the new growth. Roubaix and Tourcoing satisfied both these requirements; they were well situated as regards communications; and they have in consequence developed into the greatest manufacturing district in France. The connexion between this area and Lille is of the slightest. The roads remain mere winding country lanes, though now carrying tramways; and Lille is not at all regarded by Roubaix and Tourcoing as the capital of the district. Even Roubaix and Tourcoing themselves jealously preserve each its own individuality. Tourcoing has a kernel of old Flemish buildings, inhabitants, and traditions, and is a city in the fullest sense of the word; Roubaix, its larger neighbour, is entirely modern and industrial. While Tourcoing is republican, Roubaix is Catholic and royalist, its population being largely Belgian, and recruited from Flanders and Hainaut.

Even Roubaix, however, has a weaving industry four centuries old. Now it has 271 factories (129 weaving-mills, 27 woollen spinning-mills, 12 cotton spinning-mills) and 400 firms of merchants of one kind or another. Tourcoing has 150 factories, of which nearly half are engaged in the manufacture of woollen yarns and fabrics. The suburbs—e.g. Croix—contain even larger factories than the towns themselves.

At Roubaix more than one-third of the population is Belgian, chiefly of Flemish extraction and still talking Flemish. This has contributed much towards making Roubaix the centre of anti-patriotic feeling, anti-militarism, socialism of an advanced and international kind.

Tourcoing, already a known manufacturing centre in the twelfth century, now has 34 woollen yarn-mills, 24 twisting-mills, 15 cotton spinning-mills, and a large number of weaving-mills (4,000 power-looms). It also makes carpets on a large scale.

The little town of Halluin, on the Lys opposite Menin, is a centre of linen-spinning and weaving, an industry localized there by the suitability of the water of the Lys for steeping flax.

The Lys above Menin forms for a time the frontier between Belgium and France. It is a wide, flat valley, in which the river winds between meadows in a completely rural landscape. Above Deulemont the river is quite pure; here it receives the waters of the Deule, contaminated by all the filth of Lille.

Comines, once the capital of the Ferrain, is now a small sleepy town. It still, however, makes linen, as does its neighbour Wervicq, also once a flourishing and important town. But these and the other towns lying astride of the Lys in this part of its course are practically ruined by the Franco-Belgian frontier which, following the river, cuts them in two and erects a customs-barrier between the two halves of one and the same town. All their former prosperity has passed to the Roubaix–Tourcoing and Lille–Armentières districts.

Armentières is a considerable manufacturing town, the chief of all the industrial towns (Aire, Isebergues, Merville, La Gorgue, Estaires, Comines, Halluin) which line the course of the Lys in France. It consists of practically nothing but factories and workmen's houses, and shows few relics of its mediaeval prosperity. Its population (70,000, including suburbs) lives almost exclusively on the linen and cotton-mills. The chief industry is weaving; there are 51 power-weaving-mills in the neighbourhood, 38 of which are in Armentières itself; they include between 8,000 and 9,000 looms, producing all kinds of linens and linen and cotton mixtures. The thread is in part spun locally; there are 12 linen spinning-mills in the town, and two large cotton spinning-mills. A good deal of thread comes from Lille. There are great bleaching establishments, occupying 400 hands, as well as dyeing and finishing works, shops for the construction and repair of machines, &c. The annual value of the output of the spinning and weaving industries reaches 90–100 million francs per annum.

Farther up the Lys, near Aire, are the large steel-works of Isebergues, established in 1881–3 to provide material for the reconstruction of the Orléans railway. These works are the most important establishment of their kind in the Pas-de-Calais; they use Spanish Bessemer ore imported via Dunkirk, and derive their coal from the Lens–Béthune district.

The Lens–Béthune coalfield.—Till the discovery of coal under the Gohelle plain in 1842 this district was entirely devoid of industry; it was merely an agricultural region with a fortified market-town in Béthune. It is now densely populated and honeycombed with pits exploiting the richest coalfield in France, and forms a regular black country. There is, however, no industry except a few directly subsidiary to the collieries, such as rope-making and machine-construction.

The Ostrevant coalfield.—Owing to the presence beneath its surface of the Nord coalfield almost the whole Ostrevant is industrialized, much of it to a very high degree. Longer established than that of the Pas-de-Calais—it was discovered in 1716—this coalfield has given rise to a much more varied and widespread industrial development, the more so as this development was grafted on the old industrial life of such towns as Douai and Valenciennes, not planted down in a purely agricultural country.

The chief industries of the Ostrevant, after coal-mining, are metallurgical and chemical works and food-stuffs. The main centres are in the Escaut valley, where Valenciennes employs 2,000 hands in machine-construction, besides having chemical works, sugar-factories, and glass-works, and making railway rolling stock (the Cie. internationale des Wagons-Lits has its factory at Marly, a suburb of Valenciennes), boilers, machine tools, and chains. Anzin, from a mere suburb of Valenciennes, has developed into a great coal-mining town, but has many other industries. Farther up the Escaut valley is a series of iron and steel-works, e.g. those of Trith-St. Léger, with rolling-mills, important steel-works and nail-works, and a large phosphate factory; and the manufacturing town of Denain, with a large and rapidly-increasing population. Here are great coal-mines, iron and steel-works, foundries and forges, glass-works and sugar-works. The steel-works here are especially important; they produce 200,000 tons of pig and 150,000 tons of iron and steel annually. The navigable Escaut is largely responsible for the development of industry at Denain. Not far off is the village of Thiant, with large nail-works. Just above Denain is Lourches, with coke-furnaces and glass-works; above this point the factories abruptly cease.

The centre of the Ostrevant contains a number of villages grouped round Somain (half-way between Valenciennes and Douai) and all flourishing industrial centres. Somain, a huge railway junction with a very heavy traffic, has mines, briquette works, coal-tar distilleries, glass-works, brickworks, sugar-works, and alcohol distilleries. Aniche is a great coal centre and one of the chief seats of the glass industry in France (window-glass and mirrors are the leading products), and Abscon has coal-mines and sugar-works. Many other villages make glass, ironware, &c.

The industries of the Scarpe valley are comparatively few. There are several factories in the suburbs of Douai, e.g. a glass-works, a wool-combing mill, spinning-mills, mechanical construction works, ironworks and foundries, sugar-works, &c.; at Courchelettes close by is a petroleum refinery, and at Lambres are sugar-works and a jute mill; at Dorignies, coke-furnaces, briquette works and glass-works; a briquette factory at Roost-Warendin. All these are close to Douai. Below this the Scarpe flows through sparsely-inhabited country to Marchiennes, where the only industry is one large glass-works; later comes another industrial region round St. Amand. Here the speciality is potteries; there are also many machine-construction works, spinning-mills, tanneries, distilleries, foundries, and chain factories, distributed along the banks of the Scarpe and the road to Valenciennes. An outlying ceramic establishment is the large porcelain factory at Wandignies-Hamage, up the river.

The whole of the Ostrevant, except the Forêt de Raismes in the east and the Sensée region in the south-west, is thus highly industrial. There are light railways along all the main roads, and the traffic of every kind—road, rail, and water-borne—is exceptionally heavy.

The Maubeuge region.—A small but flourishing industrial area lies on the Sambre just above Maubeuge. It contains especially ironworks, which produce a respectable percentage of the total French output of pig, and glass-works; it also makes boilers, bridges, and girder constructions generally, railway rolling stock, and tiles. It is thus an almost entirely metallurgical district, its most conspicuous feature being its blast-furnaces. The centre of this little region is Hautmont on the Sambre, a few miles from Maubeuge. Here are great metallurgical works, with blast-furnaces and rolling-mills for zinc and iron; machine-construction works, factories for agricultural implements and machinery, and chemical works, especially a big artificial manure factory.

Not far to the east is Cousolre, the seat of the marble industry described above on p. 432.

This completes our survey of the French plain north-east of the chalk downs and north-west of the Ardennes. Summing up its main features we may say that there are two chief industrial areas: the textile district round Lille and the coal and metallurgical district in Ostrevant. In each case these have subsidiary industries (chemical and machine-construction in the north; glass-works, potteries, and machine-construction in the south), but those mentioned above are the 'key-industry' in each case. Secondary industrial centres are the Lens coalfield—as a coalfield even more important than that of Ostrevant, but practically devoid of other industries—and the Maubeuge iron-working area.

Industries such as brewing, sugar-refining, and distilling alcohol are found in all the country towns.

The down country.—Marquise, in the Boulonnais, was formerly a coal-mining and iron-working town employing 2,500 hands. It used local coal and consumed 80,000 tons of French ore a year, importing also 40,000 tons of Spanish ore, as well as pig; and it produced 36,000 tons of pig, plus 50,000 tons of finished iron per annum. But the poor quality of the local coal was always a handicap, and gradually made it impossible for Marquise to compete with other districts, especially the Ostrevant. In consequence the works fell into ruin and have never been revived. Phosphates also were once worked here, but these, too, are superseded. There are still large marble-quarries in the neighbourhood.

Arras, though it has a fine port for canal traffic, has little industry compared to its ancient position as a textile centre. It makes oils, sugar, and alcohol, and has a thriving trade in grain. In its suburbs there are a few big factories, producing mostly iron goods such as locks; and four miles away, towards Douai, are the great metallurgical works of Biache-St. Vaast, which deal especially with copper, lead, gold, and silver, and mint coins for Spain, Italy, and other countries, beside turning out all kinds of work in brass and bronze.

Albert on the Ancre is a small but busy manufacturing town with steel-works, iron and copper foundries, and mechanical construction works. It is a rising town, with the prospect of a great future.

The Cambrésis and Vermandois are in a sense strongly industrial districts, but their industries do not take the form of factories. The whole district is fertile agricultural land, especially rich in beet and cereals, and the population spends the time which is not devoted to agriculture in weaving at home. Thus on the Bapaume plateau almost every one weaves in the cottages, producing either silk for Caudry or St. Quentin, or stuffs for Roubaix; a weaver can make 6–7 francs a day by hard work, and the women who prepare the silk make 3 francs a day. The other chief centres of trade in home-woven fabrics are Cambrai, Bohain, and Le Cateau; but every town is to some extent a centre. The fabrics produced vary a good deal from place to place; in the Cambrésis fine linens (cambrics) prevail, elsewhere muslins and silks.

Cambrai has a large number of factories, all in the suburbs. Its trade in cambrics depends on goods made in the surrounding villages, but it has a large bleaching industry, second only to that of Belfast. At Escaudœuvres, just outside the city, is the largest sugar-factory in the world, which treats beet from all over the Cambrésis and even farther afield. The suburbs of Cambrai have also a great industry in chicory, the raw material being chiefly imported from Belgium, and large flour-mills.

Solesmes weaves merinos (a characteristic product of this part of the Cambrésis), linens, and cambric.

Le Cateau is the chief French centre for merinos, and also makes muslins, serges, flannels, tweeds, mohairs, &c. Most of these fabrics are made on power-looms, but there are still many hand-looms at work in Le Cateau. There are also several woollen spinning-mills, a great sugar-factory, a petroleum refinery, and a pottery employing 300 hands.

Caudry is a weaving centre which specializes in tulles. It does not compete with Calais, having a very much smaller industry, but even here the hands get wages of 40–50 francs a week, and the trade is a thriving one. There is also a large trade in silks woven in the surrounding villages.

Busigny is an important railway junction with a merino mill.

Bohain is a centre for the trade in home-woven goods. It also has mills of its own in which it weaves cashmeres, gauzes, cretonnes, and fancy goods. A great deal of embroidery is also done.

At Masnières, beside weaving-mills, there are flour-mills and glass-works.

Le Catelet produces much home-made embroidery, and in general every village of this district has a large output of muslins, silks, and cambrics.

Roughly speaking the Cambrésis home-weaving industry falls into four geographical sections: linens in the north, woollens in the east and centre, cottons in the west, and silks in the south-east. The chief villages concerned with each class of goods are as follows.

(*a*) Linen and cambric: Villers-en-Cauchies, Avesnes le-sec, Saint-Hilaire-les-Cambrai, Bevillers, and Avesnes les-Aubert, the last being the chief centre.

(*b*) Woollens: Rieux, Bethencourt, Viesly, Quiévy, Beauvois, Caudry.

(*c*) Cottons: Villers-Outreaux, Clary, Caudry in the east, Villers-Guislain and Gouzeaucourt in the west.

(*d*) Fancy silks: Ligny, Caullery, Honnechy, Bertry, Manroy, Maretz, Elincourt, Walincourt, and the whole district as far as Bohain.

Hand or domestic weaving has to face the competition of power-weaving, but in many *communes* it still holds its own. Especially for the weaving of fancy fabrics manufacturers prefer to encourage handwork rather than to set up machinery which would require frequent and expensive modification according to changes of fashion. On the other hand, the growth of power-weaving makes handwork less and less remunerative, and it is thought that in time the old industry may entirely disappear.

South of the Cambrésis, in the Vermandois district, the conditions are very similar both as regards physical geography, agriculture, and industrial life. All the villages weave, but here the only centre of first-rate importance is St. Quentin, whose factories prepare the raw material for the home-weavers and then bleach and finish the fabrics they produce. St. Quentin thus has three large cotton spinning-mills, but most of the thread used comes from elsewhere. The manufacturers have dépôts called *magasins* in the country for distributing thread and receiving the fabrics. In the town itself labour is abundant, and the industries seem likely to develop. One of these is a machine-made embroidery factory at Harly, a suburb of St. Quentin. The machines come from Mulhouse, and the hands get 4 to 10 francs a day, girls getting 2 or 3 francs. Roisel, between Péronne and St. Quentin, has weaving-mills and phosphate deposits. In general the industries of the

Vermandois are less affected by the introduction of power-looms than those of the Cambrésis, where as we have seen most of the larger places have mills.

The Thiérache.—The two industries of the Thiérache are baskets and woollens. The abundant osiers which grow in the valleys furnish a considerable basket-work industry, carried on as a home industry, and employing about 5,000 persons. The objects manufactured are exported to a great distance, e. g. to America and Australia. The condition of these home-workers appears to be very bad. In 1889 their earnings had sunk by degrees to a maximum of 2½*d.* or 3*d.* a day, and that year saw serious disturbances, after which better prices were given by the *patrons*, and it became possible to earn 5*d.* to 6½*d.* a day. But this very low rate has had a deterrent effect on the workers, who seem to be declining in numbers and tending to leave the districts where basket-work is chiefly carried on, i. e. the Oise valley and its main tributaries where the osiers grow.

The spinning and weaving of linen have disappeared since the cultivation of flax was abandoned, and have been replaced by woollen industries. These are carried on at a number of mills (Nouvion, Hirson, La Capelle, Mondrepuis, Effry, Saint-Michel, Voulpaix, Étreux, Proisy, Bohéries, &c.) centring round Fourmies, which is the chief seat of the industry. Fourmies was formerly an extremely important wool-spinning centre. It has now greatly declined, but is still a place of some importance.

The extension of this textile industry has influenced the general population and the grouping of its units. For some forty years the population of the *arrondissement* of Vervins has decreased owing to the substitution of stock-farming for agriculture, the crisis in the basket-work industry and the attraction of the industrial centres farther north. Hirson is the only *canton* in this *arrondissement* which shows an increase, owing to the growth of the town. Apart from a glass-works and some woollen-mills, Hirson has few industries, but it has become the chief centre of the Thiérache, largely owing to the importance of its railway junction, which in turn is due to the strategic value of the frontier pass known as the *trouée de l'Oise.*

The Meuse Valley.—The gorge of the Meuse, where it flows through the Ardennes plateau, is the seat of a flourishing and long-established iron industry. Neither iron nor coal exists locally, and apart from river-transport, which is tolerably good, communications are difficult. The industry has, however, existed continuously since 1468, when at the sack of Liége various nail-makers fled from that city and began to ply their trade here. By 1500 they had created a thriving industry. In 1815 the industry was further stimulated by the tariff barrier between France and the Netherlands; at that time forty blast-furnaces were working, depending for fuel on charcoal supplied by the abundant forests in the neighbourhood. Coke fuel appeared in 1824, but was for a long time very little used, partly because of the large local supplies of charcoal and partly because the special qualities of iron required by the nail-making and kindred industries were for a long time only procurable by charcoal smelting. Thus in 1866 there were eight charcoal-fired and only two coke-fired blasts; at the same time there were 55 puddling-furnaces and 145 remelting furnaces, and the industry, extending roughly from Mézières to Givet, employed 1,600 hands. In 1868 Lorraine iron made its appearance, and has now for some time past ousted all other ores. The annual output of the whole district is roughly 80,000 tons of iron, 47,000 tons of wrought steel, and 800 tons of cast steel.

Nail-making is still the main industry. It was once a home industry, but now survives under this form only in the remoter valleys of the Goutelle and Semois; elsewhere the produce all comes from factories. Cast-iron goods are especially made at Revin and Rimogne; Donchéry makes anvils, and many other villages have special industries such as saws, buckles, spurs and bits, and so on. Mézières, and especially Charleville, are centres both of manufacture and of trade; Nouzon has one of the largest outputs of iron. But practically all the villages of the Meuse valley from Givet up past Château-Regnault to above Mézières take an active part in the industry.

By the time Sedan is reached the Meuse iron industry has stopped, and weaving here takes its place. Sedan is especially known for its fine black cloth. Hand-weaving still exists, but is giving way before the competition of the power-loom.

Lorraine.—Apart from such minor industries as the saw-mills, brush and *sabot* factories, and basket industry of the Côtes de Meuse villages, the only industry of this area is the mining of *minette* iron-ore and the metallurgical industry to which it has given rise. This industry is concentrated round Longwy at the northern and Nancy at the southern extremity of the *minette* field; the works are mostly old-established, and have not undergone a fraction of the development which the recent history of iron-mining in Lorraine would lead one to expect. This is owing to the lack of coal, a question which has been considered in the previous chapter, to which reference may here be made (p. 398).

PART III. LUXEMBURG

Of the total population of the Grand Duchy, viz. 249,822, or roughly a quarter of a million (1907), 35 per cent. live by agriculture (here taken as including forestry and fishing), as against 41 per cent. who live by industry. The number who practise agriculture is, however, a good deal higher than the number who live by it, being 40 per cent. of the whole; for this figure includes not only most—if not all—members of farmers' families other than the smallest children, but also the large number of persons (13·2 per cent. of the entire population) who practise agriculture (whether on their own account or for wages) as a 'subsidiary occupation'.[1]

Luxemburg is on the whole not an industrial country. Geographically half its area belongs to the Ardennes–Eifel high plateau, where there is nowhere any industry to speak of; the remainder belongs to the 'Arlon belt' of moderate agricultural country, to the Moselle valley, and to the Lorraine plateau. The only section which really lends itself to industrial development is the last-named, which including as it does a portion of the *minette* ironfield has become a centre of iron-mining with attendant metallurgical and other works.

The most important industry is therefore iron-mining and smelting, which occupies 15,203 persons, or

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[1] For comparison with the table given in Chapter V (pp. 249, 253), the following table of occupied persons has been compiled from the Luxemburg census.

	Men.	*Women.*	*Total.*	*Percentage*
Agriculture . .	52,509	49,394	101,903	57
Industry . . .	46,142	5,609	51,751	27
Trade . . .	15,316	10,407	25,723	13
State service, liberal professions, &c. . .	4,114	2,738	6,852	3
Total . .	118,081	68,148	186,229	100

29 per cent. of the industrial population. No other industry has any international importance whatever. The building trades occupy 9,628 persons, clothing 6,201, food-stuffs 5,244. Quarrying and working in stone, including bricks, tiles, and pottery, employ 3,267 hands; machines of all kinds 2,997; woodworking (saw-mills, furniture, &c.) 2,927; metal-working (foundries, ironware, smiths, nail and lock-making) 2,690; textiles 886; tanning and other leather trades 820, and paper-making 110. None of these minor industries, as may easily be seen from these figures, has undergone any great development; though the tanneries, weaving-mills (hardly any spinning is done), paper-mills, breweries, and distilleries, and sugar-factories play a considerable part in the internal trade of the country.

The distribution of industries in Luxemburg may most easily be sketched by distinguishing five districts: Luxemburg town, Esch *canton*, the centre (Capellen, Luxemburg rural, and Mersch *cantons*), the north (Clervaux, Redange, Diekirch, Vianden, and Wiltz *cantons*), and the east (Echternach, Grevenmacher, and Remich *cantons*). Of these Esch *canton* roughly corresponds with the Luxemburg *minette* field; the centre is the 'Arlon belt' country, consisting of liassic and triassic hills; the north is the high plateau of the Ösling, a district of the Ardennes–Eifel massif; and the east consists of the Moselle valley and the lower valleys of its tributaries.

Luxemburg town has representatives of all the industries, but none in very large numbers. Of a population of 20,000 it has only 4,000 industrial workers, of whom nearly a third are in the clothing trade; many other industries number over 100 hands, but no other over 500 except building and food-stuffs. There are 115 textile workers, 275 engaged in metal-working, and 197 in machine-construction.

Esch *canton* is the only really industrial area in Luxemburg. Over a third of its total population consists of industrial workers; a percentage which seems incredible till it is observed that there is a large preponderance of men (over 60 per cent. of the whole), of whom some 68 per cent. are factory hands. There are very few districts of Belgium where the percentage of industrial workers is so high. Of the 21,000 industrial workers in this *canton*, 14,200, or over two-thirds, are employed in mining and smelting *minette* ore. There is a large mechanical construction industry (823 hands), and electric plant making occupies 173 hands; the other chief trades (beside building, clothing, and food-stuffs, all important) are various kinds of iron-work (about 600 hands). Textiles are practically absent.

The centre of the country, consisting largely of the rather densely-populated districts round Luxemburg and on the Belgian frontier towards Arlon, has a good deal of industry. It is fairly good agricultural land, but the number of persons dependent on industry for a livelihood (as distinct from the persons engaged in it) rather exceeds those dependent on agriculture. Of the occupied persons 23 per cent. are industrial; these are to be found especially in the neighbourhood of the capital, where several large villages have industries. Several industries, such as iron-foundries, potteries, quarries, lock-making, weaving, saw-mills, are either practically confined to this district or at least much more developed here than elsewhere; and among the others of importance may be noted machine-construction (699 hands) and the usual building (3,256), clothing (1,638), and food-stuffs (1,295) trades.

The north, with its low population, has also a low industrial development, and what exists is confined to the valleys about Diekirch, Clervaux, Vianden, and

Wiltz. Only 14 per cent. of the occupied persons are engaged in industrial work; and five-eighths of these are employed in building, clothing, and food-stuffs. The remaining industries, therefore, only occupy 5·5 per cent. of the occupied or 4·5 per cent. of the whole population. Among these are quarries (534 hands), ironwork of various kinds (453), woodworking (619), tanning (334), carriage building (275), and textiles (240).

The east, the Moselle and Our valley country, is very little industrialized; it lives chiefly on its wines and fruit. Of its occupied persons only 13·5 per cent. are industrial. Quarrying and stonework employ 774 persons, or 13 per cent. of the industrial workers; woodworking occupies 516; building, clothing, and food-stuffs occupy 1,310, 1,258, and 883 respectively.

PART IV. GERMANY

INDUSTRY IN THE RHINE PROVINCE

The Rhine province stands at the head of the German states, not only in industry as a whole, but in almost every individual industry taken singly.

The Rhine province had in 1907 a total population of 6,750,000, of whom 1,430,000, or 21 per cent., were engaged in mining and industry. The most populous industries are the textile industry, mining, and metallurgy, all of fairly equal extent. The mining and metallurgical population, however, lives largely on the right bank of the Rhine, and is therefore not further considered here.

The development of industry on a great scale in the Rhineland dates largely from 1888–9, in which years a sudden impulse, whose causes are not very clear, affected most of the industries of this region. Between

1889 and 1892 there was a sudden rise of prices to famine figures, accompanied by a feverish activity in the foundation and extension of industrial concerns. A new factor was introduced by the general lowering of tariffs between Germany, Austria-Hungary, Belgium, Switzerland, and Italy, effected by the treaties of 1892. The full effect of this measure was of course only apparent later, but its tendency was to facilitate both exports and imports, and thereby to institute a closer relation between German manufacturers and the general European market. At first this was prejudicial to German industry, which had hitherto been protected by the high tariffs. Men were thrown out of employment, and many, if not most, firms found their shares falling. But this decline was only temporary. It was for a time intensified by the cholera of 1892, and the very bad harvest of 1893, which crippled the home market; but already German goods were finding markets abroad, and the export trade of the Rhineland was rising fairly steadily. In 1894, however, one of the most profitable branches of this export trade was cut off by the new Russian tariffs, and from that time German manufacturers have gradually turned their attention primarily to their home markets, although their export trade has always been very large.

General Distribution of Industries

In that part of Germany which falls within our area there are, broadly speaking, three great and various smaller industrial districts.

Of the three great manufacturing districts the northernmost is that which centres round Crefeld and München-Gladbach. In the north of this district there is coal-mining, but the staple industry is the textile. Silks and velvets are the speciality of the Crefeld looms, but the mills of this district also produce cottons and woollens, the latter especially at München-Gladbach. There are also ironworks and mechanical construction works, but these are here secondary to the mills.

The manufacturing district which lies east and north of Aachen is remarkable for the variety of its products. It is a considerable coal-mining country, employing between 5,000 and 6,000 miners; its iron and steel-works are important; it has a fairly well-developed textile industry (which is also found in the districts of Eupen and Montjoie, to the south), large mechanical construction works and large glass-works. It also has important zinc-mines on the Belgian frontier.

The third great industrial district is that of the upper Moselle. This falls outside the Rhine province, and belongs entirely to Lorraine. Its main industry is iron-mining, and upon this depend numbers of blast-furnaces and steel-works in the Moselle valley and in the valleys of its tributaries the Fensch and Orne.

Of the minor industrial areas we may mention (1) the suburbs of Cologne, where, in addition to great chemical works, glass-works, potteries, textile-mills, machine construction works, sugar and chocolate works, &c., there is a large industry in the extraction and compression of lignite (see p. 384); (2) the textiles and potteries of Bonn; (3) the lead-mines of Mechernich on the slopes of the Eifel; (4) the quarrying district of Plaidt, Niedermendig, Mayen, and Kaisersesch, west of Coblenz.

It is difficult, however, to give an account of the industries of the left bank of the Rhine without some description of those on the right bank, which are in no sense distinguishable from them. It may therefore be well to mention as briefly as possible the main centres and types of manufacture on the right bank. The Rhineland-Westphalian coal industry, the largest in Europe, occupies a continuous area reaching eastward from Duisburg and Ruhrort on the Rhine. This has attracted industries of all kinds, notably metallurgy and mechanical construction, also ironware, shipbuilding, pottery and tiles, glass, and even to a certain extent textiles. The last-named industry is, however, as definitely subordinate on this bank of the Rhine as it is primary on the opposite bank about Crefeld and München-Gladbach.

Düsseldorf forms an important industrial centre. It has great ironworks; indeed blast-furnaces are practically continuous along the banks of the Rhine from hence to Ruhrort and for some distance eastward. It has glass-works and tile-works, spinning and weaving-mills, mechanical construction works and chemical works.

The Wupper basin is a great textile district. Elberfeld and Barmen are among the great spinning and weaving centres of the world, and the other main industry is the chemical, which arose here for the purpose of supplying dyes for the products of the mills.

The right-bank suburbs of Cologne (Mülheim a-R., &c.) are large manufacturing places, with mechanical construction works, textile-mills, &c.

Opposite Coblenz lies the little plain of Neuwied, a busy manufacturing district chiefly occupied in making ironware and cement and in quarrying.

Finally, the hills on the right bank of the Rhine between Coblenz and Cologne are very rich in ores, much more so than those of the left bank; they produce one-sixth of the whole iron-ore output of Germany, though for the most part they do not smelt it, but send it down the Rhine to the ironworks of the Düsseldorf-Westphalian region.

While, however, the foregoing are the chief industrial centres of this region, the whole district, with the exception of the Eifel, is strongly industrial in character, and the smaller towns mostly have their manufactures, chiefly textile and metallurgical. Even the Eifel once had numbers of ironworks, but these have now fallen into decay. Only the Moselle valley, from Thionville downwards, has always been (with slight exceptions at Trier) untouched by industrial developments.

Statistics of Hands employed[1]

The mining and metallurgical industries of the Rhine province are grouped together and employ 241,000 hands (these and other figures are those of the industrial census of 1907); 14,000 are employed in mining ores, of whom half work iron-ores in the hills east of the Rhine (an inconsiderable industry compared to the 14,000 iron miners of Lorraine), while the other half work in zinc, lead, and other mines, especially those situated near Aachen and Mechernich; 85,000 are employed in the metallurgy of these and other ores; 75,000 of these are occupied by the great iron and steel-works which in the Rhineland centre round Aachen on the one hand and the Duisburg-Düsseldorf district on the other, while the rest are mostly accounted for by the zinc and other works near Aachen; 140,000 are employed in coal-mining (123,000, first in the Crefeld–Duisburg district, secondly in the Erkelenz field, and thirdly in the Wurm–Inde field near Aachen; for details of these fields see Chapter VIII); coke-furnaces and briquette factories (6,000 and 5,000; same districts); lignite-mining (4,000; in the lignite bed near Cologne; for details see p. 384), and the making of lignite briquettes (3,000).

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[1] These statistics are those of the Rhine province. They therefore include the strip of country east of the Rhine included in that province but strictly lying outside our area, and exclude that part of Lorraine which we include.

The metal-working industries, exclusive of metallurgy proper, occupy 164,000 hands. Of these 147,000 are employed on iron and steel, and produce all kinds of ironware, as distinct from machines, which come under a separate heading; other metals are comparatively unimportant.

Mechanical construction employs 126,000. Locomotives and steam-engines occupy 5,000; agricultural machines, 2,000; textile machinery, 6,000; girder construction, 7,000; boiler-making, 6,000; electrical plant, 15,000; coachbuilding (including motors and bicycles), 24,000.

Chemical works, whose personnel is always small in proportion to their size, occupy 29,000, of whom synthetic dyes employ 9,000, and explosives 6,000.

The textile industry employs 179,000 hands. Spinning accounts for 80,000 (cotton, 17,000; wool, 8,000; linen, 2,000; silk, 1,500), weaving for 97,000 (silks, 45,000; woollens, 23,000; cottons, 15,000; linens, 2,000); bleaching, dyeing, printing, and finishing for 26,000.

Finally, paper-mills (mostly in the hills east of Düsseldorf and Cologne) occupy 24,000 hands. There are, of course, many other industries, but these are taken as typical of the most important.

Wages in the Rhine Province

The average daily wage over the whole Rhine province varies between 2·40 and 4·0 marks. The latter figure is only reached in half a dozen places—Düsseldorf, Duisburg, Oberhausen, Remscheid, &c.—in the industrial district on the right bank of the lower Rhine, where a very high average prevails. Most of the big towns of the Rhenish-Westphalian coalfield have an average wage of 3·80, and the districts round them one of 3·60 or more. North of the coalfield there is an abrupt transition to an area of low wages (2·70 on the north bank of the Lippe; only 3·30 at Wesel and Cleves).

On the left bank of the Rhine wages are lower. The highest figures are 3·80 at Crefeld and 3·75 at Neuss, opposite Düsseldorf; München-Gladbach, like Elberfeld and Barmen, has 3·50, and to south and west of Gladbach the decline is rapid, wages of 2·70 to 3·00 prevailing between here and Aachen. The coalfields near Aachen have an average wage of 3·50; the industries of the town itself one of 3·20. At Cologne the average is 3·50; it forms the centre of a large district, extending south to the Eifel and up into the Sauerland, with an average of 3·25, rising again to 3·50 at Bonn.

Leaving the plains we enter a low-wages area. In the Eifel wages are highest (3·00) near Aachen and Coblenz, and lowest (2·40, 2·50) in the Hocheifel and on the southern slopes of the massif. Cologne and Trier have averages of 3·30; the Hunsrück, 2·50. The Saar coalfield brings wages up again, but not very greatly; the much smaller industrial development produces nothing like the high wages of the Westphalian area. In the districts of Saarbrücken, Saarlouis, and Ottweiler the average is 3·50; elsewhere it is 3·20.

These figures, of course, include agricultural wages as well as industrial properly so called.

CHAPTER X

COMMUNICATIONS

Introduction: Geographical Considerations

The great development of industry and commerce in Belgium before the modern exploitation of her mineral wealth was very largely due to her position on lines of international communications, and a large proportion of her modern wealth in commerce, population, and industry is owing to the same cause.

The main facts as regards these international lines may be summarized in two statements.

1. The Belgian littoral is the terminus of a series of routes traversing Europe from south-east to north-west.

2. The Belgian plain is the natural link between France on the one hand and Holland, northern Germany and Russia, and Scandinavia on the other.

1. The mediaeval greatness of the Flemish cities was founded primarily on overland trade from the Mediterranean and so from the east. At one end of the overland route this trade created such cities as Genoa and Venice; at the other, Bruges, Ypres, and the various manufacturing and trading towns of Flanders. Local manufactures were stimulated by trade, and thus arose the great weaving industry of the Flemish and neighbouring French cities. The primary cause of this activity was the trade route which, after coming down the Rhine, branched off, where the Rhine emerges from the Schiefergebirge, into Holland and Flanders respectively.

Another route of some importance led from Burgundy and Champagne round the western end of the Ardennes massif and down to the plain at Cambrai. This was always the route by which the wines of central France were exchanged for the textiles of Cambrai and the north. This route also led to the sea, but it conveyed little produce for overseas exportation.

These two main routes, the Mediterranean route and the Champagne–Flanders route, are still represented by such lines as the Rhine waterway and railways, the St. Quentin canal from Cambrai to Paris and the Sambre–Oise canal, and the great passenger-traffic lines from Ostende by Namur and Luxemburg to Alsace and Switzerland, and from Calais by Valenciennes and Hirson to Belfort and Switzerland. All these are modern traffic-lines of the very highest importance.

2. As a link between France and Germany Belgium holds a position unique in Europe, and rendering it far more important than Holland, which is almost its equal as a terminus of transcontinental routes.

From Namur to Nice runs an almost continuous barrier of hills: Ardennes, Lorraine plateau and Vosges, Jura, Alps. This chain contains a number of good passes, but its continuity is only broken once, at Belfort. Consequently to go east from France without crossing a mountain pass it is necessary to go either by Belfort or by the Belgian plain. There have always been four main ways between France and Germany. The easiest are the northern by Belgium, and the southern by Belfort. The two intermediate routes are by the Pass of Zabern, leading through the Vosges to Strassburg, and across the Lorraine plateau by Luxemburg to the Moselle valley. But both these are unsatisfactory, especially the Luxemburg route, since the Moselle valley is a very poor line of communications and would seldom be chosen in preference to the Belgian or Zabern route.

The great northern route between France and Germany is therefore that which immediately skirts the edge of the hill district, passing through Maubeuge, Namur, Liége, and Aachen ; then cutting straight across the Rhine plain to hit the river at Cologne and so on to Westphalia and Hanover. It is this route —the main Paris–Berlin route—which gives to the above towns their commercial and military importance. Maubeuge, guarding the low pass over the Cambrésis downs, is of military importance only. Namur and Liége are the gates of the Ardennes and trade-route junctions, and Cologne is the intersection of the Paris–Berlin route with that from the Mediterranean to the North Sea.

Of secondary significance, but still important, is the Paris–Brussels–Holland route, passing through Cambrai, Valenciennes, and Mons.

Thus the international importance of our area may be summarized by saying that it lies at the intersection of the chief route between the Mediterranean and the North Sea, and the chief route between France and Germany. The fact that this junction lies almost on the coast enhances its importance ; for it means that the Franco-German route is tapped here by branches to the sea, which make Boulogne, Ostende, and Flushing the natural ports from the North Sea not only to the south-east (Switzerland, Italy, Austria, &c.), but to Paris and Berlin. Thus from the point of view of England the ports of this coast unite three diverging lines : to Paris, to Switzerland, and to Berlin.

With regard to internal communications our area may be divided into three sections : the low plains of Flanders and the Campine, the plateau of Brabant and the Hesbaye, and the hills of the Ardennes and Artois massifs. In the low plains the natural means of transport is by water. Navigable rivers are common, and canals are easy to construct, so easy that any line may as well be canalized as any other, and the only nodal points are natural harbours like Antwerp and Dunkirk and confluences of great rivers like Ghent. Of these points the harbours are important, since the coast as a whole is remarkably harbourless; but otherwise canals may run in any direction, and the development of industry and population does not depend on natural lines of communication.

Roads and railways can similarly be constructed anywhere, the only difficulties being the bridging of large rivers—never very serious except in the case of the lower Escaut—and the wetness of the ground.

On the plateau, from Charleroi to Malines and from Termonde to Liége, water-transport hardly exists, and can only be secured by artificial lines like the Brussels and Louvain canals and the Brussels–Charleroi canal. Roads and railways are the best means of communication; these are easy to construct over the undulating open country, but the river-valleys, deeply eroded as they are, present obstacles. Naturally the railways would tend to run in the valleys; but two of the most important lines (Brussels–Namur, for Luxemburg, and Brussels–Louvain–Liége, for Cologne) are compelled to cross each valley in succession, which they do at a high level on viaducts. With these restrictions railways can cross the plateau freely in any direction.

In the hill districts traffic is more severely restricted to natural lines. Canals only exist in a few passes of the Artois–Cambrésis ridge; otherwise water-borne traffic is confined to the Meuse, with a very little in certain tributaries. Railways avoid the hills. The Franco-Belgian lines cross the Artois ridge, but in the Ardennes region the only main line is that which unites Namur and Luxemburg. The valleys are here very serious obstacles, and even on the top of the plateau level going is rare and, where it exists, is generally associated with peat-bogs. The same applies to the Eifel, but here the Germans have constructed for strategical purposes a number of lines which commercial requirements would never have demanded or justified.

RAILWAYS

Belgium has a greater length of railway line for her size than any other country in the world; and in addition to this she has the best and most extensive system of light railways in existence. She is therefore in a quite exceptional position with regard to railway transport; and it further must be observed, first, that many lines of international importance pass through her territory, and secondly, that the neighbouring portions of France and Germany have a railway development hardly inferior to her own.

It is impossible to give here a full description of the Belgian railways. We shall accordingly restrict our attention to describing the main through lines and to enumerating the chief features of the Belgian railway system.

Main Lines

The points round which the whole system of through railway lines revolves are Brussels in the centre, Cologne in the east, and Lille in the west. After these come various other points of secondary importance: Luxemburg, Liége, Aachen, Namur, and Ghent are the chief of these. On the sea-coast Calais, Ostende, and Antwerp are the most important points, followed by Dunkirk and Flushing.

The chief lines run either inland from the coast or roughly parallel to it, and may thus be conveniently divided into two groups.

Lines running inland.—1. From Calais the direct route inland runs through St. Omer, Hazebrouck, and Lille to Valenciennes and Hirson, whence it descends either into the upper Meuse valley for Verdun and Nancy or into the Aisne for Champagne and the south of France. This, a well-known passenger line between England and Switzerland and Italy, runs at its northern extremity between the Artois downs and the Belgian frontier, traversing the industrial Nord department of France and thence passing into the Thiérache. A branch from Hazebrouck to Dunkirk is less important for passenger traffic, but much more important for goods traffic, than the Hazebrouck–Calais line.

The other important Swiss through line, from Boulogne by Etaples and Amiens to Laon and Reims, passes the other side of the Artois downs and does not come into our area.

2. Parallel to the foregoing is the Ostende–Luxemburg line, a very direct line passing through Ghent, Brussels, and Namur, and then climbing through the Condroz to cross the high ridge of the Ardennes at Neufchâteau, whence it descends to Arlon. Beyond Luxemburg it gives direct communication with Metz and Strassburg. This also is a great passenger-express line.

3. A diagonal route from Calais to Cologne passes through Lille, Brussels, Louvain, Liége, and Aachen. The Germans have built a more direct line between Aachen and Brussels, omitting Liége and Verviers and crossing the Meuse at Visé.

4. From Flushing an important route runs through Breda to the Rhine, giving the shortest railway route between London and Cologne; and, in connexion with Flushing, Rotterdam, and the Hook, railways run up both banks of the Rhine through Cologne and Coblenz.

5. There is a direct line, important for goods traffic,

from Antwerp by Herenthals and Roermond to Düsseldorf.

Lines parallel to the coast.—Most of these supply through services between Paris on the one hand and Belgium, Holland, and the Rhineland on the other.

6. Paris–Amiens; thence up the Ancre valley and across the downs past Thiepval and Achiet-le-Grand, Arras, Lens, and Lille. Passes into Belgium at Mouscron, thence to Courtrai and Ghent or Ostende. A very important line for passenger and goods traffic.

7. Paris–Péronne; thence across the downs by Roisel to Cambrai, thence to Valenciennes (crossing No. 1), Mons, and Brussels, Malines, Antwerp, and Rotterdam. This is the Paris–Brussels and Paris–Holland through route.

8. Paris–Compiègne; thence up the Oise, to the head of the Somme valley at St. Quentin, across the downs to Le Cateau and down the Sambre and Meuse to Maubeuge, Namur, and Liége, joining No. 3 for Cologne. This is the Paris–Cologne route.

The foregoing are the only express lines which cross the chalk downs, with the exception of the Calais–Boulogne line at their north-western extremity. From Calais to Arras the only railways across the downs are four single-track lines, one at St. Omer, two crossing each other at St. Pol, and one from Arras to Doullens and so to the lower Somme.

Other lines.—In the southern portion of our district are various lines, whose primary interest is strategical. Among these may be mentioned:

9. Cologne–Trier, by Euskirchen and Gerolstein, together with a considerable network of double-track lines running along the Belgian frontier, a district where such lines can have no purpose except strategical. At Trier this line joins

10. The Moselle railway from Coblenz to Metz, with

branches to Luxemburg. This carries a little passenger and a fair amount of goods traffic, connecting as it does the *minette* field with the Rhineland.

11. The chief French strategic railway leaves the Meuse valley at Sedan and climbs by way of the Chiers to the Briey plateau, and so by Conflans to Pont-à-Mousson and Nancy. This line, with its Longwy branch, is the chief railway of the Briey plateau and is much used for mineral traffic. From the Meuse valley it connects direct with Valenciennes by No. 1, and with Paris by Laon.

The Belgian Railway System

Belgium was the first continental country to build railways. In 1834 the Brussels–Malines line, the first on the continent, was constructed, and in the following years the growth of the State railway system was very rapid. By 1850 there were 390 miles of permanent way carrying traffic. From this date to 1870 the increase was not remarkable; but between 1870 and 1875 the number of miles rose from 540 to 1,240. In 1890 the mileage was 2,020; in 1900, 2,500; and in 1911, 2,520. These figures only apply to the State lines, which constitute the great majority of the railways; but there are also privately owned lines. Since 1905 these lines, never representing more than a small proportion of the whole, have been in part bought up by the State. At present the following private lines exist.

1. Chimay line. This company owns 37 miles of track traversing the Chimay valley from Hastière to Lavaux, on the Meuse between Givet and Dinant, west-south-westerly to Anor between Hirson and Fourmies. It is a single line of no great importance.

2. Ghent–Terneuzen line. Single line, 28½ miles long, joining Ghent to the Scheldt estuary at Terneuzen, which is also the mouth of the Ghent ship canal. Con-

sidering the busy nature of the country through which this line passes it might be expected to take a good deal of traffic, but this is not the case. It carries more passengers than the Chimay line, but very little in the way of goods, which travel by canal.

3. Hasselt–Maeseyck line. Single track, 25½ miles long, passing through Genck and Opoeteren. The traffic and profits of this line are very small, as the country through which it runs is a desolate portion of the Campine. The development of the Campine coalfield, however, is certain to increase the value of the line. For its relation to the coalfield see Atlas, Map 10.

4. Malines–Terneuzen line. Single track, 42 miles long. This passes through a fairly busy part of the country. It crosses the Escaut at Tamise, of which town it is the only normal-gauge railway, and proceeds through St. Nicolas across the Dutch frontier to Hulst, Axel, and Terneuzen. There is plenty of traffic, and the profits of the line are quite respectable.

5. Nord-Belge line. This company owns 107 miles of line, most of which is double. It is divided into four independent sections: (*a*) From Mons southward in the direction of Maubeuge as far as the French frontier. (*b*) From Charleroi and Marchienne-au-Pont up the Sambre to the French frontier at Jeumont. Both these are double lines and form part of the express system above described. (*c*) From Givet down the Meuse to Namur; single line. (*d*) From Namur down the Meuse to Liége, dividing at Flémalle-Haute into two branches, one going down each bank of the Meuse. Double line, forming a section of the Paris–Cologne express route.

These four lines are all continuations in Belgium of the French Chemins de Fer du Nord. Their aggregate importance both for goods and passenger traffic is very considerable. The fourth section is the longest and in every way the most important; it is the only railway serving the great industrial establishments between Liége and Namur, with the exception of a single-track line crossing the Meuse valley at Huy. The total profits of this system are not only very much larger than those of the other private lines, but they are also far higher in proportion to the expenditure.

6. The little Taviers–Embresin line in the Hesbaye, a branch of the single-track line from Namur to Tirlemont, is only 5½ miles long and need not be further considered.

These five systems together own 240 miles of permanent way or 8·7 per cent. of the total Belgian railway system of 2,760 miles. Previous to 1906 there were two other private lines, the West Flanders Company, which owned the lines from Roulers to Bruges, Poperinghe, Thielt, Courtrai, Menin, &c., and the St. Nicolas–Termonde. These lines amounted to about 120 miles; they have now been bought up by the State. Nineteen other companies have also been bought up at various times: the most important of these were the Bassins-Houillers (375 miles), Liégeois–Limbourgeois (267 miles), Luxembourg (190 miles), and Lignes des Flandres (140 miles). Altogether the State has bought, at one time and another, 1,440 miles of line as against about 630 miles which it has built on its own account. It also runs the following lines, taking a share of the profits or contracting for a lump sum paid to the shareholders: Tournai–Jurbise (27 miles), Hal–Ath and Tournai–Frontier (27 miles), Braine-le-Comte–Ghent (34 miles), Jonction belge-prussienne (11 miles), Spa–Luxemburg Frontier (34 miles), and Eecloo–Bruges (16 miles): total 151 miles.

With the foregoing exceptions all the railways are owned and run by the State. As the cheapness of railway transport in Belgium is remarkable and exercises an influence, already often referred to in this volume, on the life of the nation, it is desirable to consider how the finances of these State railways are managed and whether their financial situation is satisfactory.

The railways are not regarded as a source of revenue. Their working is directed with a view to paying its own expenses. Owing, however, to the way in which the accounts are kept it is not easy at first sight to determine how far they do this. The method adopted is to close the accounts of the State railways at the end of every year. If there is a loss on the year's working the State pays it off, without either charging interest or expecting repayment. If there is a profit the State takes it on the same understanding. The published accounts show that since their establishment the railways have utilized (up to 1912) capital to the amount of £100,000,000, and made a total profit of about £1,500,000. But this profit consists of the sum total of yearly profits after allowing for payment of interest on capital, minus the sum total of yearly losses. If the railway system had conducted its affairs on a business footing by introducing new capital to make up for losses and forming a reserve fund out of the profits, the accounts would show a total loss by now of between 2½ and 3 millions. Most of this turnover from profit to loss is accounted for by losses incurred in the early years of the railway system together with the interest which, if run on business lines, the railways would now be paying on those losses. It thus appears that, in comparison with railways in other countries, the Belgian State lines have a very great financial advantage in being unencumbered by the results of their early losses; and this must be taken into consideration in reflecting upon the cheapness of transport in Belgium. This cheapness is of course also due to the fact that at present the railways do not aim at furnishing steady dividends; but this would not itself enable them to provide such cheap transport.

This is actually provided at a loss, paid out of the pocket of the State and amounting altogether to 2½ or 3 per cent. in 80 years on the capital invested.

It may no doubt be maintained that the State is justified in incurring this loss for the sake of the advantages which it confers on the industrial and agricultural life of the country. The mobility of Belgian labour, the great ease with which agricultural and industrial products are distributed, the maintenance of a semi-rural life on the part of industrial employés and the consequent avoidance of anything like rural depopulation—these and many other characteristic features of Belgian life are due in great part to the cheapness and excellence of railway transport. This being the case it would appear that the loss represents money well spent. On the other hand, the lack of business method can hardly be prevented from having a detrimental effect on the working of the railways. Thus much expenditure which, both on general grounds and in obedience to regulations, ought to be paid out of revenue is charged to the capital account; and in other ways the system shows defects which are inevitable in a concern whose losses are guaranteed from outside while it retains no interest in its profits.

Taking these drawbacks into account, however, public opinion in Belgium is almost unanimous that, in spite of many details which might be improved and, in general, of an unduly bureaucratic method of administration, the State working of the railways is tolerably satisfactory and adapted to the interests of the public.

The fares for passenger traffic are just under 1½*d.* per mile first class, about 1*d.* second, and ½*d.* third class. The third-class carriages are practically workmen's carriages, and are not comfortable. The second-class are about on a level with the best English third-class, or rather better; the later types have arm and head rests, and seat three or four a side according as there is or is not a corridor. The coaches are usually of the three-axle type, but bogie coaches are used for long-distance express traffic. Season tickets are very cheap, and are much used. The remarkably cheap workmen's tickets have already been mentioned (p. 254).

The goods rates on the Belgian lines are about the same as the English for small parcels and over short distances. But for parcels of any size—say over 14 lb.—and for long distances the Belgian rates are very much cheaper. The scales of rates are—especially in the case of English railways—so enormously complicated that comparison is difficult. But in general it may be observed that for a ton of merchandise the Belgian light railways afford, for short distances, an extraordinarily cheap means of transport; for longer distances the ordinary goods trains offer rates one-third to one-half the English goods charges, while the Belgian express goods rates are just a trifle higher than the English goods. For a hundredweight of goods the light railways are again very cheap for short distances, while the express goods service has a rather high rate for short distances and a very low one for long distances. Thus, for a hundredweight of goods over a distance of 60 miles the English goods rate (i. e. a typical rate of a typical railway) is twice the Belgian express goods, the English passenger train rate three times; and the excess of the English over the Belgian rates increases as the distances increase. The rates for cattle are about the same in the two countries. For milk, on the other hand, the Belgian rate is very much lower, especially for small quantities.

Belgian Light Railways

The Belgian network of light railways (*Chemins de fer vicinaux*) is one of the most interesting features of her system of communications; it has been developed to an extraordinary degree, and its mileage per square mile of territory is ten times that of any other country. Established in 1885 these railways possessed in 1886 50 miles of line; in 1890, 440; in 1900, 1,650; and in 1912, 2,400.

The general principles on which these lines have been constructed are summarized below.

The 'Société nationale des Chemins de Fer vicinaux' was founded by legislation in 1884 and 1885. The Act by which it was established made it the sole concessionnaire of light railways, concessions for which are granted by royal decree. This Society, which exists under the sanction and supervision of the State but has an independent financial existence, thus has the refusal of every project for a light railway.

Local railways are as far as possible owned, constructed, and worked by the district affected, this responsibility being undertaken by a local body consisting of communal authorities or private persons; but the ultimate responsibility for the technical, financial, and general management lies with the Society, which acts as a kind of trustee, expert, and receiver for the proprietors of each railway individually, as well as collectively for the railways as a whole. The position of the Society towards the individual lines is thus in some ways a good deal like that of the Co-operative Wholesale Society in relation to local Co-operative Societies.

The light railways are not intended to compete with the main railways; in fact they are carefully designed, and their tariffs are regulated, to make such competition impossible. They are intended to feed the main railways with passengers and freight, and thus to increase, not to diminish, their traffic. Thus the main railways are interested in the establishment and success of light railways; but, on the other hand, they are forbidden by law to acquire shares in them or in any way to control their construction or management. Finally, these light railways are free from local taxes, and they are directed to fix their tariffs locally at such rates as will enable them to be run without loss.

Such are the main points of the Act of June 24, 1885, by which the system of light railways was inaugurated. The principle underlying these regulations is the combination of local ownership with central direction; i. e. the initiative in constructing lines, the capital to be sunk in them, the interest in their success, lies in the hands of the district affected, while expert advice on all subjects is forthcoming from the central Society. This arrangement makes it possible to establish local lines with a minimum risk of mismanagement through the inexperience or incapacity of the promoters.

The finances of the Society require a little more attention. The Society is a Joint Stock Company with limited liability but unlimited nominal capital, divided into £40 shares. As each new concession is granted the required capital is raised by the issue of a corresponding series of shares. No railway can borrow money on its own security; but each shareholder in the Society is *pro rata* a shareholder in any line or lines represented by the series in which his shares are situated. Most of the shares are held by *communes*, provinces, or the State; this is because public bodies are allowed to pay up capital in instalments extending over long periods, while private persons are not admitted as members till their shares are paid up in full. There are in consequence hardly any private shareholders except a few persons or firms who have a direct interest in assisting a projected line. The principle of State ownership, applied to the main railways, has in this way been extended to the light railways. The capital is raised by the issue of 3 per cent. bonds, the interest on which is limited by law; the shares do not appear on the market. Any railway which cannot be made to pay is expelled from the Society.

The administrative work of the Society is vested in the Governing Council, a body of six, four of whom are appointed and can be dismissed by the Crown. This body demands and receives all concessions, makes contracts, issues bonds, fixes tariffs, appoints officers, and, in short, controls all incomings and outgoings of the Society. Its doings are, however, watched by the shareholders, who have access to every document, and to some extent supervised by the State. The executive is thus independent of the widely scattered joint owners; but in practice the Council works the lines by contracts let by public tender, generally on a 15 years' lease, and these contracts are let whenever possible to local contractors or to the public authorities themselves. These contracts are so arranged that the contractor is amenable to local public opinion; tariffs are fixed by the central Governing Council with a view to local conditions; and the contractor's profits are a percentage of gross receipts. Thus regulated the system of contracts does not seem in any way detrimental to the interest of the public.

The Society has been aided by the State to the following extent: a preliminary grant of £40,000 from the Treasury was made to assist in the formation of the Society, and the Treasury further guaranteed a sum not to exceed £24,000 annually to assist in securing the interest on the shares of the Society; the State also undertook to become a shareholder. The State thus found the cash and credit necessary to start the system of light railways; but it has never been called upon to pay a penny of its guarantee, the preliminary advance is being paid off, and the State is drawing 3 per cent. interest on the shares it holds. The assistance of the State thus appears to have justified itself from a business point of view, though it was undertaken merely as a subvention to a work of national advantage.

The practical working of these principles seems to be fairly smooth and simple. If the public wants a light railway—and it is said that every village in Belgium hopes one day to possess one—there is no question as to the identity of promoter or owner. The local authorities go to the Society, which will provide them gratis with advice and estimates, and, if the local authorities decide to build, their formal application follows, and is submitted to the Governing Council. If it is accepted by the Society this fact alone goes far to reconcile any dissentient elements and to induce land-owners and others to give easy terms; the more so as it is abundantly proved that light railways are advantageous to the district which they serve, and regularly result in a rise in agricultural rents. The Society will not demand compulsory powers from the Crown so long as the project is subject to any considerable degree of opposition; and it thus falls on the local supporters of the scheme to conciliate opposition by private negotiation, which may take time but saves money which would otherwise go in parliamentary or legal expenses. During this preliminary stage expenses incurred are borne by the Society if the scheme fails, and by the local line if it matures; this makes for caution all round, the Society being unwilling to accept a scheme that is unlikely to mature, and the local authorities realizing that if their scheme succeeds they are responsible for the expenses. The technical and legal work is all done by the salaried staff of the Society.

After this stage the Council is called upon to fix the capital; once fixed this cannot be altered, but any underestimate must be made good from the general funds of the Society, till the loss is justified and further subscriptions are sanctioned by royal decree. Any surplus is put to a reserve fund applicable to that particular line.

Construction is now begun, the capital having been subscribed; the Council is able to provide cheap cash and every kind of expert supervision, and the standardization of types and material makes for cheap construction. When the line is working the advantage of local co-operation is seen in the adaptation of tariffs and traffic arrangements to local produce and requirements. The owners, who are mostly on the spot and continually using their line, demand punctual and frequent services, but little in the way of speed and luxury; and in consequence there is every reason why the working of the line should be conducted according to the wishes and in the interest of the public.

The general effect of the light railway system on life in Belgium is remarkable. It has reduced the average time taken by a journey into the nearest town from a country village by half, and the expense by half also, as compared with the *diligence* fares; weekly seasons, workmen's and school-children's tickets afford a still greater reduction. Market-going is facilitated, and the markets all over Belgium stimulated; market-gardening in the neighbourhood of large towns is made easier and more profitable, and dairy-farming has undergone an even more striking development. Two details of great importance are the growth of beet-culture in districts where the difficulties of transport (always considerable in the case of beet) previously made it impossible, and the ease with which manures can be distributed over the country from centres in the towns. Industries have also benefited: e. g. new and previously abandoned quarries are being worked, and new factories concentrate round the light railway lines.

About half the lines run along the roads (actually 54 per cent.); 11 per cent. along roads specially widened for the purpose. The remainder are laid, naturally at greater expense, along specially prepared tracks, which sometimes, especially in the Ardennes, demand a good deal of engineering. The gauge is almost always one metre (39½ in.); there are no signals; stock and working are alike economical. Stations are installed in existing cafés or shops, and as little building as possible is undertaken.

In conclusion, it should be remarked that a most careful student of economic problems in Belgium remarks of her light railway system: ‘It may safely be said that without it the success which she has achieved in agriculture would have been impossible.’

WATERWAYS

The waterways of Belgium and the adjacent countries are naturally good. The Scheldt, Meuse, and Rhine have always been important factors in the communications of these countries, and the same is true in a less degree of the Moselle and the many sluggish rivers of the Belgian plain.

Of these natural waterways only the lower Rhine and the estuary of the Scheldt can take modern traffic without artificial improvement; and consequently the waterways of our area consist almost entirely of canalized rivers and canals.

1. The most important navigable rivers fall into the following groups:

(*a*) Rivers of the Flemish coast, Aa and Yser, with a network of canals of which the chief are the great canals connecting Bruges and Ghent with the sea, capable of taking ocean-going vessels.

(*b*) Rivers of the Scheldt basin: the Lys, Escaut, and Dendre in the west, and Rupel, Demer, and Nethe in the east, together with the Brussels and Louvain canals in the centre taking the place of the unnavigable Senne and Dyle.

(*c*) Rivers of the Meuse basin: the Meuse itself and the Sambre.

(*d*) Rivers of the Rhine basin: the Rhine, Moselle, and Saar.

(*e*) The French rivers: Somme, Oise, and Aisne.

2. These groups or basins are separated by certain watersheds which constitute obstacles to water-borne traffic. The Flemish watershed, a line passing north-east and south-west through Ypres, which separates the coastal rivers from the Scheldt basin, is not a real ridge and offers no difficulty in the way of canal construction. The same is true of the Campine watershed between the lower Meuse and the eastern Scheldt basin, which is crossed and traversed by several canals; and of the equally insignificant watershed between the Meuse below Liége and the Rhine below Cologne.

The four watersheds which constitute real barriers to artificial, as well as to natural, waterways are, first, the Artois ridge running roughly from Cap Gris-nez south-east to Arras and the source of the Escaut between Cambrai and St. Quentin; the Brabant–Hesbaye ridge running east and west between the Haine–Sambre–Meuse valley on the south and the Dendre, Senne, Dyle, and Gette on the north; the western Ardennes, draining into the Oise and Aisne on the south-west, the Sambre on the north, and the Meuse on the east; and finally the eastern Ardennes and Eifel, between the upper Meuse, the Moselle, and the Rhine.

We shall now briefly describe, from the point of view of navigation, these river-systems, and the watersheds that divide them.

1. *The River-systems*

(*a*) *Rivers of the Flemish coast.*—The *Aa* is navigable, with a depth of 6 ft., from Gravelines to St. Omer (18 miles), where the Neuf-fossé canal connects it, across the Flemish watershed, with the Lys.

The *Yser* is navigable for 25 miles above Nieuport; it is connected with the Lys by the Ypres canal, with extension to Comines.

A network of other canals begins at Calais and extends along the whole Flemish coast.

(*b*) *Rivers of the Scheldt basin.*—The *Scheldt* estuary is a waterway of the first importance, bringing ocean-going vessels to the great port of Antwerp. The lower Scheldt is taken as extending to Ghent; here the depth is 6½–10 ft., as against 20–80 ft. at the Dutch frontier. The length of the Scheldt between these two points is 66 miles.

The upper Scheldt (*Escaut*) extends from Ghent to Cambrai (99 miles; 60 in Belgium and 39 in France). It is not canalized; boats go down on the current and tow up. From Cambrai a canal (sometimes incorrectly called the Canal du Nord) runs on to St. Quentin and the Oise. A depth of 6 ft. is normally available throughout.

The *Dendre* gives 41 miles of canalized waterway between Termonde and Ath, where a canal leads to the Haine valley. The depth is about 6 ft.

The *Brussels–Willebroeck canal*, taking the place of the unnavigable Senne, gives 17 miles of waterway navigable for vessels of considerable draught; it was under reconstruction for ocean-going vessels at the outbreak of war.

The *Louvain–Dyle canal*, taking the place of the unnavigable upper Dyle, gives 19 miles of waterway with a depth of nearly 12 ft. This and the preceding are both deep-draught canals capable of dealing with heavy traffic.

The *Dyle* and *Demer*, from the origin of the Rupel (mouth of the Nethe) to Diest, give together 34 miles of canalized waterway, the depth varying from 8 ft. in the neighbourhood of Malines to 3¼ ft. at Diest.

The *Grande Nethe* and *Petite Nethe* are canalized waterways of little importance (total 39 miles) whose depth depends on the state of the water.

The *Rupel*, formed by the junction of the Nethe and Dyle, is only 7½ miles long, but is an important waterway connecting the Brussels and Louvain canals with the Scheldt. It is very sinuous, but its breadth varies from 360 to 820 ft., while its depth varies from 3–6 ft. at the source to 8·2 ft. at the mouth at low and 17–22 ft. at high tide. There is no towpath.

(*c*) *Rivers of the Meuse basin.*—The *Meuse* (*Maas*), up to Liége, is not canalized; and the minimum depth available is not much over a foot. The Belgian Government has so far been unable to secure the co-operation of the Dutch in carrying out the highly desirable work of canalizing this long portion.

Above Liége the Meuse is canalized up to a point some distance above Sedan, and constitutes, in conjunction with the French Canal de l'Est above this point, an important waterway bearing a considerable traffic.

The *Sambre* prolongs the navigable line of the middle Meuse, west-south-west from Namur, 94 miles to Landrecies, as a canalized waterway with a minimum depth of 6½ ft. and a breadth of 16 ft. The lower Sambre between Charleroi and Namur is a line of much importance, and carries 300-ton boats with coal, stone, ore, &c. Much coal also goes up the river from Charleroi to France. At Landrecies the Sambre–Oise canal begins.

The *Ourthe* is canalized for 18 miles above its mouth at Angleur, with 3¼ ft. depth. Above this its depth, always small, varies with the state of the water; 62 miles more are, however, navigable partly for rafts and partly also for small boats.

The *Lesse*, entering the Meuse just above Dinant, has about 20 miles with a varying depth of 1–2 ft.

The *Semois* has 65 miles with a depth of 1–2 ft., suitable for rafts. This and the two foregoing connect the interior of the eastern Ardennes massif with the Meuse waterway.

(*d*) *Rivers of the Rhine basin.*—The *Rhine* is of immense importance for the whole of western Germany and southern Holland. Up to Coblenz it has minimum depths of 8 ft., and it carries a great quantity of traffic: coal, iron-ore, stone, &c. A remarkable feature is the absence up to this point of navigable branches on either bank, the Lippe and Ruhr being only 1½ ft. deep at low water. The Dortmund–Ems canal, which at the outbreak of war was being extended to Ruhrort, is the only exception.

Even the *Moselle* is not fully navigable. It is uncanalized as far as Metz (185 miles), and has depths of 2½–3 ft. between Coblenz and Sierck, and 2 ft. between Sierck and Metz, at low water. It is used by smallish barges for hay, wine, &c., but has never been developed, largely owing to its sinuous character below Trier. Above Metz it is canalized (depth 6½ ft.) to the mouth of the Meurthe, above which there is a lateral canal.

The *Saar* up to Saarlouis has a depth of 2 ft. at low water. Thence to Saarguemines (27 miles) it is canalized, and this section constitutes a northward branch of the Marne–Rhine canal.

(*e*) *The French rivers.*—The *Somme* is partly canalized and partly followed by a lateral canal, which renders the whole length of its valley navigable. The silting-up of its mouth makes it valueless as a means of communication between upper Picardy and the sea, and it only acts as a branch of the very important Escaut–Oise (St. Quentin) canal.

The *Oise* is canalized from Conflans below Paris to a little above Compiègne, and is thereafter followed by a lateral canal as far as Vadencourt at the angle of the river. Hence the Sambre–Oise canal runs across the watershed to Landrecies.

The *Aisne* is canalized from its mouth at Compiègne to a point a little above Soissons, after which it is followed by a lateral canal as far as Vouziers, below which the Ardennes canal connects with the Meuse near Sedan.

2. *The Watersheds*

(*a*) *The Flemish watershed* is crossed by (i) the Neuffossé canal from St. Omer to Aire, connecting the Aa and Lys; (ii) the Ypres canal, connecting the Yser with the Lys at Comines; (iii) the Ghent–Ostende canal, connecting the Escaut at Ghent with Bruges and the sea. This last is a canal of importance, diverting much heavy traffic from the Scheldt estuary; from Ghent to Bruges the depth is 6½–7½ ft.; from Bruges to the sea 14 ft. A still more important waterway for Ghent is (iv) the Terneuzen canal, running into the Scheldt estuary north-north-east through Dutch territory, and having a depth of 18–21 ft. This brings ocean-going vessels into Ghent itself.

(*b*) *The Campine watershed.*—This watershed is no more than a flat plain, and canals traverse it freely in every direction. The most important are the Meuse–Escaut canal from Antwerp to the Meuse below Roermond with branches to 'sHertogenbosch, Liége, Hasselt, &c.; and the Turnhout canal which diverges from it near Antwerp and rejoins it near Moll.

(*c*) *The lower Meuse–Rhine watershed.*—It is a remarkable fact, especially in view of the German desire to develop Antwerp as the natural port of the Rhineland and Westphalia, that no canal yet crosses this watershed. One has been begun, leaving the Rhine at Grimlinghausen (mouth of the Erft, a little above Düsseldorf) and apparently designed to run through Neuss westwards to the Niers valley and so to Venlo on the Meuse. The first 20 miles of this have long been in existence; but (though a German atlas of 1913 shows it as completed) the latest information shows that nothing has been done to it for many years, and it appears to be completely disused.

(*d*) *The Artois ridge* is a very important obstacle to water-borne traffic. From Cap Gris-nez to St. Quentin no waterway crosses it; but at its comparatively low south-eastern end it is crossed twice: (i) by the St. Quentin canal, connecting the Somme and Oise with the Escaut at Cambrai—it includes tunnels of 3 and $\frac{3}{4}$ miles long respectively and attains a summit-level of about 125 metres; (ii) by the Sambre–Oise canal, leaving the Sambre at Landrecies and reaching the Oise at Vadencourt, with a summit-level of about 145 metres.

A third canal has been planned—the projected 'Nord Canal'—to unite Péronne on the Somme with Douai, on the Scarpe below Arras. This would have a summit-level of only about 120 metres near Bertincourt.

(*e*) *The Brabant–Hesbaye watershed* forms a considerable obstacle, and is only crossed twice: (i) by the very important Brussels–Charleroi canal, connecting two of the greatest industrial districts of Belgium and bringing the coal of the Centre and Charleroi basins to Brussels and Antwerp; and (ii) by the Blaton–Ath canal which connects the Dendre with the canals of the Haine valley and the upper Escaut, and thus forms a link in the shortest water route from Antwerp to France. Further east, in the Hesbaye, no canal crosses this ridge.

(*f*) *The western Ardennes* is only crossed at its south end, viz. by the Ardennes Canal between the Aisne valley and the Meuse near Sedan. Further north it forms a complete obstacle.

(*g*) *The eastern Ardennes and Eifel* form a complete obstacle to all canals.

Summary

The great Franco-German waterway from Paris to Strassburg passes through Toul and Nancy just south of our area, so that all the important through routes within the area may be regarded as radiating from the plain of the southern Low Countries—the Scheldt–Meuse–Rhine basin—in four directions:

(*a*) The south-western line: to Paris, by St. Quentin and Landrecies, which are the vital points for all water-traffic between our area and the Seine basin.

(*b*) The southern line: to Lorraine up the Meuse where it traverses the Ardennes in its winding gorge; a line of great importance as connecting the *minette* ironfield with the Franco-Belgian coalfield and steel-working area. A branch from this main line, crossing the gap in the Ardennes south-west of Sedan, makes a connexion with the Seine basin.

(*c*) The south-eastern line: up the Rhine to Westphalia, Cologne, and beyond; with a branch, the undeveloped Moselle waterway to Saarbrücken and Metz.

(*d*) The north-eastern line: the Dortmund–Ems canal, which might easily be brought to bear directly on Antwerp by a canal from Ruhrort to Venlo.

These four lines pass through the only four available gaps in the chain of hills that surround the Belgian plain on three sides—the Artois ridge, the western Ardennes, the eastern Ardennes and Eifel, and the Westerwald–Sauerland massif.

SEAPORTS

Belgium possesses in Antwerp one of the greatest seaports of Europe. This is the only natural port in Belgium; the others being artificial seaports like Ostende, Zeebrugge, and Nieuport, or inland ports like Bruges, Ghent, and Brussels, which have been opened to sea-going vessels by means of ship canals. For commercial purposes the importance of Antwerp is only approached by that of Ghent. Antwerp is not only the natural port of the great industrial areas near that town and Brussels, but of the central Belgian coalfield with all its factories; it is also the best port for the Rhine Province and much of Westphalia. The international relations of Antwerp are thus complicated; it is a Belgian town in which Germany has necessarily a strong interest, and its communications with the sea pass through Holland.

The only other ports of any international significance are Ostende, with its mail and passenger traffic to England and its express rail services to all parts of Europe, and the commercial port of Ghent, standing at the head of a direct waterway to Paris.

Notes are given below on each of the Belgian ports in turn.

The port of Antwerp lies on the right bank of the Scheldt 55 miles from the sea. The river which gives access to it is winding and encumbered in its wider parts by sandbanks; but in spite of this the port is accessible, in the daytime and on a flood tide, by vessels of any size. The width of the Scheldt at Antwerp is about 450–500 yds.

The accommodation consists of 6,000 yds. of riverside quays, with an average depth alongside of 26 ft. at low water, and ten basins; not counting important enlargements, projected and in hand, and four additional basins used by canal boats and small coasting vessels. The largest liners use the riverside quays, in parts of which there is a minimum depth of 38 to 39 ft.; smaller ocean-going vessels mostly use the basins. All the regular passenger liners use the quays.

As Antwerp is one of the greatest ports in the world, it is hardly necessary to add that it is extremely well supplied with dry docks, repairing facilities of every kind, railways alongside the quays, cranes of all types, &c. It must, however, be said that the existing accommodation is quite inadequate to the needs of the normal traffic, and the port is regularly overcrowded. The projected docks will, when completed, do something to relieve this congestion, which is largely due to the fact that Antwerp is a great centre of canal and river transport, and is consequently compelled to receive vast numbers of canal boats as well as sea-going vessels. As the latter often discharge into the canal boats, these cannot be kept out of the larger basins, and do much to cause the overcrowding.

The canal, 14 ft. deep, which leads from Ostende to Bruges, gives access at the latter town to a port consisting of four basins. One basin, together with an avant-port, forms the 'Old Port'; three other basins together comprise the 'New Port'. Together these basins provide perhaps a mile of quays suitable for vessels drawing less than 14 ft. There is one 25-ton crane and a number of light travelling cranes. The Ostende canal proving insufficient to meet the needs of Bruges, a larger canal was planned in 1895, debouching at Zeebrugge. The port of Zeebrugge (q.v.) thus exists primarily as the entrance to the new Bruges ship canal.

Blankenberghe is a small fishing port with a tidal harbour, the entrance to which has a minimum depth of 6–10 ft.; at high water vessels drawing up to 12 ft. can enter. The banks are sloping and brick-faced, except for 275 yds. of quay and a small wooden pier. There are no cranes or other appliances.

There is an inland port of considerable size at Brussels. It includes an avant-port, which, when completed, will consist of an enlargement of the Brussels Ship Canal, 360 ft. broad, having over 2,000 yds. of quays well provided with railways, cranes, &c., and with a depth of 21 ft.; a basin, almost equal in size and magnificently equipped, opened in 1908 and called the Maritime Basin, and two basins for the use of canal craft, with light cranes. There are two small dry docks with repairing facilities.

Ghent, which, owing to its position at the junction of the Lys and Escaut, is by nature an important centre of communications, is still more important owing to the numerous railways and canals which meet here. Its connexion with the sea (Scheldt estuary) by the Terneuzen ship canal in 1827 has therefore made of it a considerable seaport and a centre of international commerce.

The port consists of the Bassin du Commerce, a mile long by 120 yds. wide, with 18–21 ft. of water, railways, sheds, cranes, &c.; the Bassin au Bois, 250 by 140 yds., with railways and sheds; the outer harbour (avant-port), 1,200 yds. by 100, with numerous cranes and sheds; and the new basin (1¼ mile by 200 yds.) with two slips, cranes, sheds, &c. There are two dry docks.

Nieuport, the only Belgian port west of Ostende, lies two miles inland on the Yser, whose old mouth forms the entrance. It is a tidal harbour where vessels enter at high water and ground on the mud; there is also a wet dock whose gates are opened at high water. Nieuport is a considerable centre for canal traffic, six canals meeting there. It has a small dry dock, and repairs to wooden vessels can be carried out.

Ostende is chiefly important as a mail and passenger harbour, especially in connexion with the Belgian State mail-boats to Dover, and other lines to London and Tilbury. It has a large tidal harbour with quays alongside which these steamers lie. There are also docks in communication with the Bruges–Ostende maritime canal, turning basins, and railway and other accommodation. The present fine tidal harbour was constructed in 1905. In addition to the great passenger traffic there is a fair amount of goods traffic, especially in vegetables and food-stuffs to England and coal from the same country. Ostende is also a considerable fishing port.

Zeebrugge has a large roadstead protected by a mole on the west and north. Inside this roadstead is a sea-lock giving access to the Bruges–Zeebrugge canal for vessels up to 64 ft. beam and 26 ft. draught. The existence of Zeebrugge as a port is due to this canal, begun in 1895; but it was also intended to serve as a port of call for large liners. Inside the sea-lock is an inner basin, with quarantine station.

In addition to the Belgian ports enumerated, our area contains the seaports of Dunkirk, Gravelines, and Calais, in France, and Flushing in Holland, beside Rhine ports such as Cologne. For the detailed treatment of these last we may refer to the forthcoming Manual of the Rhine Province; but notes on the French and Dutch ports are given below.

Dunkirk is a port of the same type as Ostende and Nieuport; that is to say, it occupies a breach in the normally continuous dunes of the Flemish coast and consists of a series of basins some distance inland from the shore, reached by a long approach. It is the only French port near the Straits of Dover which possesses a sheltered natural harbour, formed by the sand-banks off the coast, which here provide a roadstead not unlike that of the Downs on the other side of the straits, and entered by a channel about 30 ft. deep. The value of this roadstead is enhanced by the fact that at Dunkirk an old mouth of the Aa debouches, forming a breach in the dune-belt and affording a good site for a series of docks and basins.

During the middle of the nineteenth century Dunkirk rose rapidly to the first place among the seaports of north-eastern France, and its harbour became more and more congested. In the last quarter of the century great harbour-works were undertaken, and by the end of the century Dunkirk was challenging Bordeaux for the position of third port in France. It is now chiefly used by large ocean-going vessels; and though in addition it is the base of the Iceland fishing fleet, its value depends primarily, and will increasingly depend, on its being the natural port for the great mining and manufacturing districts of Lille, Lens, and Valenciennes.

Gravelines, though situated at the mouth of the navigable Aa, and therefore supplied with a direct waterway to the Lys valley and Lille, is now of no importance. Its harbour, the river-mouth, is much silted up; the traffic has been diverted to Dunkirk and Calais; and few vessels now call except Iceland fishing-boats.

Calais, apart from its manufactures, is almost exclusively engaged in traffic with England. The most important branch of this is the passenger and mail traffic, of which Calais takes a greater share than any other French port; but the traffic in goods has also some importance. The new port, begun in the seventies, consists of an avant-port 15 acres in extent and a floating basin of 29 acres, on the east of the old town; the old basins lie further west. At the same time the approach was greatly improved. The chief commerce is in foodstuffs, especially the export of sugar; and there is a good deal of deep-sea fishing. With regard to railway communications Calais taps two express routes: through Boulogne to Amiens and so to Reims or Paris, and through Lille either to Brussels and Germany or to Valenciennes, the Ardennes, and Switzerland.

Flushing, though a popular summer resort, is far behind either Antwerp or Rotterdam as a seaport. Large docks and a system of canals were begun in 1873, and there are various industrial establishments (mechanical construction, State railway works, ship-building yards, an establishment of Krupps, breweries, and soap works); but the commerce is inconsiderable. The exports are chiefly food-stuffs; the imports coal, colonial produce and timber. The harbour consists of an outer basin 720 yds. long with 20 to 33 ft. of water, enclosed by moles, and two inner basins respectively 430 and 490 yds. long by about 100–200 yds. broad. Flushing was once a great naval base, but this phase of its history came to an end in the sixties.

CHAPTER XI

BELGIAN COMMERCE

FOREIGN COMMERCE

ACCORDING to Belgian usage commerce is divided into *commerce général* and *commerce spécial*. 'General' commerce includes goods in transit; 'special' commerce consists, in the case of exports, of goods produced in the country, and in the case of imports, of goods consumed in the country. It will thus be less cumbrous for our purpose if instead of distinguishing four categories—exports general and special, and imports general and special—we distinguish three: bona fide exports, or goods of Belgian origin (= special exports); bona fide imports, or foreign goods consumed in Belgium (= special imports); and transit trade, in which the import and export figures are the same, apart from such accidental circumstances as the momentary congestion or depletion of entrepôts and warehouses.

The trade figures for 1911 were as follows:

Imports: £178,337,000, or £24 per head of the population.

Exports: £142,012,000, or £19 per head of the population.

Transit: £118,500,000, or £12 per head of the population.

The steadiness and rapidity with which these figures have increased may be judged from the following table of import figures, in millions of pounds sterling:

1840	1850	1860	1870	1880	1890	1900	1910
£81	£93	£202	£353	£670	£667	£878	£1,690

The decline in the imports between 1880 and 1890 is more than balanced by the increase in exports and transit trade during the same period.

Ever since the beginning of the present century Belgium has been among the first five countries in the world in the absolute value of her commerce, and the first in the value per head of the population.

Analysis of chief trade figures.—The following tables show the chief articles of trade imported (bona fide imports), exported (bona fide exports), and in transit respectively. They apply to the year 1911:

IMPORTS

	In millions of francs.	*Fraction of total.*
Total	4,508	
Textile raw materials [1]	700	15·5 per cent.
Grain	674	15·0
Other food-stuffs	202	4·5
Vegetable matter [2]	335	7·4
Timber	160	3·5
Hides	156	3·5
Chemicals	128	2·9
Iron and steel	105	2·3
Other metals	130	2·9

EXPORTS

	In millions of francs.	*Fraction of total.*
Total	3,580	
Wool	346	9·7 per cent.
Other textile raw materials [3]	216	6·0
Iron and steel	271	7·6
Thread	187	5·2
Grain	176	4·9
Other food-stuffs	123	3·4
Textiles	115	3·2
Zinc	111	3·1

[1] Over half of this is wool.

[2] Beet, seeds, wood-pulp, &c.

[3] Half of this is flax.

TRANSIT

	In millions of francs.	*Fraction of total.*
Total	2,299	
Iron and steel	358	15·6 per cent.
Cottons	172	7·5
Machines and tools	142	6·2
Woollens	79	3·5
Wool	75	3·4

From these tables it will be seen that one-fifth of the total imports are food-stuffs; and the value of food-stuffs imported is nearly three times as great as that of food-stuffs exported. The next import is raw materials for textiles; but of this a large proportion is wool, much of which is only washed in Belgium and re-exported without being spun. This wool thus figures prominently among the exports, important among which are also metals (one-tenth) and spun and woven goods (one-twelfth). Of the transit trade, that in metals, textiles, and metal goods is by far the most important.

With regard to the countries of origin and destination the following tables may be given for the same year.

IMPORTS

Origin.	*In millions of francs.*	*Fraction of total.*
Total	4,508	
France	738	16·4 per cent.
Germany (Zollverein)	602	13·3
United Kingdom	436	9·7
U.S.A.	341	7·6
Russia	318	7·0
Holland	298	6·6
Argentine	272	6·0

EXPORTS

Destination.	*In millions of francs.*	*Fraction of total.*
Total	3,580	
Germany (Zollverein)	909	25·2 per cent.
France	695	19·5
United Kingdom	498	13·9
Holland	352	9·9
U.S.A.	114	3·2

TRANSIT: ENTERING

Origin.	*In millions of francs.*	*Fraction of total.*
Total	2,299	
Germany	973	42·4 per cent.
France	485	21·1
Holland	223	9·7
United Kingdom	219	9·5
Switzerland	151	6·6

TRANSIT: LEAVING

Destination.	*In millions of francs.*	*Fraction of total.*
Total	2,299	
United Kingdom	438	18·9 per cent.
France	410	17·9
Germany	321	14·0
U.S.A.	157	6·8
Holland	141	6·1
Argentine	122	5·3

From these figures it appears that Germany, France, and this country are the countries with which Belgium is most closely connected. Germany takes a very high proportion—a quarter—of her total exports; of her imports one-sixth come from France and one-eighth from Germany. The use made by Germany of the Belgian facilities for transit trade is enormous: over two-fifths of all the goods passing through Belgium in transit come from Germany. The large import figure from the Argentine refers to grain and wool.

We shall now examine in somewhat greater detail the trade in various kinds of goods, distinguishing live stock, food-stuffs, raw materials, and manufactured goods.

Live stock.—The total import of cattle amounts to something like 80,000 head per annum, of which 65,000 come from Holland. This would be very much higher but for the high duties and severe sanitary regulations; it is a very small total for a country with a population like that of Belgium, where cattle are little bred. There is practically no export.

About 50,000 horses are imported yearly; the overwhelming majority from the United Kingdom, of which two-thirds are destined for slaughter. No other country contributes nearly as many as the remaining third of the English contribution. The export of horses (26,000 in 1912) is declining: 66 per cent. go to Germany.

There is a very small trade in sheep; no export, and a small import, 60 per cent. from Holland and 30 per cent. from the Argentine. Lambs are imported almost exclusively from Holland.

Food-stuffs.—985,000 tons of wheat are imported yearly, of which 29 per cent. comes from Rumania and 21 per cent. from the Argentine. Of the export (233,000 tons) 60 per cent. goes to the Congo. Rye is imported to the amount of 67,000 tons annually, 45 per cent. from Germany; of the export (14,800 tons) 42 per cent. goes to France. Of the import of barley (241,000 tons) a large and rapidly increasing percentage comes from India; the same is true of rice, which already sends 66 per cent. of the total import of 27,000 tons. 52,000 tons of barley are exported (65 per cent. of this to Germany); and of 21,000 tons of rice exported 45 per cent. goes to Holland. The import of oats (70,000 tons) comes in a small (25 per cent.) but very rapidly increasing proportion from the United States.

Maize is imported to the annual figure of 414,000 tons (42 per cent. from the Argentine), and exported to the amount of 130,000 tons, 52 per cent. of which go to France.

It will thus be seen that Belgium imports a great deal of grain, especially from Rumania, Argentine, and India, and also from Germany; and exports a comparatively small quantity.

There is practically no import of flour, and only a small export to Holland.

The annual import of butter is 3,500 tons: 80 per cent. comes from Holland; 600 tons are exported, all to France. Cheese is imported, also from Holland almost exclusively, to the extent of 6,000 tons annually. 23,000 tons of fish are imported, mostly from Holland and this country.

There is a considerable export of vegetables, especially to this country—a rapidly increasing trade in both fresh and preserved produce—the United States, and France. Much chicory is exported to Germany, and 3,000 tons of prepared chicory imported, almost all from France.

Of raw beet-sugar 25,000 tons are exported, half to this country and half of the remainder to Holland; none is imported. 2,500 tons of cane-sugar are imported, 40 per cent. of which comes from India. Refined and granulated sugar is exported annually to the extent of 54,000 tons, two-thirds of which goes to the United Kingdom.

There is a large import of salt (58,000 tons crude: 43 per cent. from Germany, 41 per cent. from France; 36,000 tons refined: 41 per cent. from France) and a small export which goes almost exclusively to the Congo.

Wine is imported in large quantities: bottled, 850,000 gallons, all from France; unbottled, 6,200,000 gallons, from France and Spain. There is a small export to Holland.

7,000,000 gallons of unbottled beer are imported, coming in equal quantities from Germany and the United Kingdom; the export is only 166,000 gallons, half of which goes to the U.S.A. Of bottled beer, on the other hand, 88,000 gallons are exported (mostly to the Congo) and only 12,000 imported.

There is a large import, but a still larger export, of spirits, the latter going almost entirely to Holland.

It thus appears that the only food-stuffs exported in really considerable quantities are vegetables, sugar, and spirits. Of all other food-stuffs the import in general far exceeds the export, and Belgium depends almost entirely on foreign supplies. Holland, Germany, and France are Belgium's chief sources of food-stuffs other than grain.

Raw materials.—The export of coal remains fairly stationary at 4·8 to 5 million tons (avoirdupois). Four-fifths of this goes regularly to France; about one-twentieth (a falling figure) to Germany. The import is increasing: 6·2 million tons in 1910, 7·9 million tons in 1912. Over half of this comes from Germany, a quarter from the United Kingdom, and about an eighth from France. The same tendency is even more marked in the case of coke: the imports rose from 480,000 tons in 1910 to 930,000 in 1912, almost all from Germany; the exports, which show a very slight decline (just over a million tons in 1910, and just under it in 1912), go 40 per cent. to France, 25 per cent. to Germany, and 20 per cent. to Luxemburg. Of briquettes 600,000 tons are exported, 50 per cent. to France; 400,000 imported, mostly from Germany.

The import of iron-ore is rising (5·1 million tons in 1910, 6·3 in 1912), and comes increasingly from France (57 per cent. in 1910, 69 per cent. in 1912) and decreasingly from Luxemburg (32 per cent. in 1910, 21 per cent. in 1912); other countries contribute only very small quantities. The export is about half a million tons, three-quarters of which goes to Germany.

There is a very large trade in iron. About 400,000 tons of pig were imported in 1912, 44 per cent. from Germany, and considerable percentages from Luxemburg, France, and the United Kingdom; the export, two-thirds of which goes to France, is only about 13,000 tons. Of scrap-iron 55,000 tons are imported, an increasing figure of which half comes from France; 90,000 tons are exported, two-thirds of this going to Germany. Of all other kinds of iron and steel the import is diminishing (121 million tons in 1910, 88 million in 1912), while the average export is fairly steady at about 100 million tons. The steel comes chiefly from Germany and Luxemburg and is exported to this country; the iron comes mostly from this country, except the pig-iron, of which a large proportion comes from Germany.

Zinc is a valuable export (93,000 tons, 40 per cent. to the United Kingdom) and there is a considerable import of it also (15,000 tons, over half coming from France). 13,000 tons of copper are imported, 45 per cent. from the U.S.A., and 8,000 tons exported, 50 per cent. to Germany.

Wool is a very important article of commerce. The 80,000 tons which are annually imported come chiefly from France, the United Kingdom, Australia, and the Argentine; of the exports, which reach 57,000 tons, half goes to Germany and a quarter to France. The large import of cotton (72,000 tons in 1912) comes mostly from the U.S.A. and India; of the export

(26,000 tons) half goes to Germany and a quarter to France. The imports of flax are increasing rapidly (102,000 tons in 1912); Russia contributed a diminishing percentage (54 per cent. in 1910, 43 per cent. in 1912) and France an increasing one (27 per cent. in 1910, 38 per cent. in 1912). The export (40,000 tons) goes mostly to France and this country.

Among vegetable raw materials are beet, of which 200,000 tons are exported for making sugar, mostly to Holland; rubber, of which 6,600 tons are imported and 5,700 exported; and wood-pulp, of which 75,000 tons are imported, mostly from Norway, Sweden, and Russia.

In general, therefore, Belgium is a greater consumer than producer of raw materials. Practically all are exported on a much larger scale than that on which they are imported. The most notable exception, zinc, is only an apparent exception; for zinc is smelted in the Belgian works from imported ore, and therefore counts, on export, rather as a manufactured article than as a raw material.

Manufactured goods.—Thread and yarns are largely exported, chiefly to this country and Germany; cotton thread 3,200 tons, linen thread 19,500 tons, woollen yarns 2,500 tons. The import, which is comparatively small (1,700 tons cotton thread, 6,600 tons linen thread, 500 tons woollen yarns) comes mostly from France.

Linens and cottons are also exported on a considerable scale; of the former 11,000 tons were exported in 1912, chiefly to this country and France, as against 1,400 imported, mostly from France; of the latter 39,000 tons were exported as against 10,000 imported. The United Kingdom and Germany are the chief sources of imported cottons; the Congo, U.S.A., and this country the chief markets for exports. Woollens, on the other hand, are exported to the amount of 5,000 tons only, as against an import of 10,000 tons, mostly from the United Kingdom.

Iron and steel goods (bars, plates, rails, girders, wire, pipes, &c.) are exported to the amount of 709,000 tons, and imported, mostly from Germany, to the amount of 111,000; in the case of ironmongery the import (value £1,274,000, half of which comes from Germany) exceeds the export (£822,500). Fire-arms have a very large export (£1,024,000, chiefly to France and Germany); the import (£114,000) is mostly from the United Kingdom. Machines are exported to the amount of 104,000 tons yearly, the imports, chiefly from Germany, being about half that amount. There is also a large export trade in motors, bicycles, and motor-cycles, and their parts; these go especially to the United Kingdom.

The export of paper is about 33,000 tons to the United Kingdom, France, and Japan; the import 15,000, mostly from Germany.

Pottery and tiles are exported at the rate of 18,000, and imported at the rate of 16,000 tons; tiles come in large quantities from Holland, pottery comes from Germany and U.S.A., and is sent to Holland.

There is a very large export (154,000 tons) of glass, as against a small import of 12,000 tons. All kinds of plate-glass are exported in large quantities; of window-glass there is also a very large export and hardly any import; table-glass is sent in great quantities to all countries, especially the United Kingdom; only in the case of bottles does the import exceed the export. They come increasingly from Germany, which is taking the place of France and Holland as a producer of bottle-glass.

These are the most important articles of commerce among manufactured goods; and it will be seen that in every main group of articles the exports exceed—as a rule greatly exceed—the imports. The reverse is only the case in a few subsections such as woollens and bottle-glass ; it also applies to paving-tiles and various other classes of goods.

The general conclusion is therefore that Belgium's export trade consists almost entirely of manufactured goods produced in her own factories ; her imports are divisible into two main classes, viz. raw materials for use in these factories and food-stuffs for the maintenance of her dense population. This generalization must of course be taken as approximate only, and must be corrected by such facts as the export of vegetables and the import of woollens, but it expresses the main characteristics of Belgium's foreign commerce.

Customs

The general tariff policy of Belgium, with its history and its effect, as at present constituted, upon the economic condition of the country, is considered in the next section. Here the following remarks will be sufficient.

All exports, and all goods in transit, are duty free. Import duties alone are levied, and those only in certain cases. By far the largest source of revenue consists in the duties on food-stuffs, which amount to 20 million francs annually (the figures given are throughout those for 1912). Next to these come duties on raw materials, especially tobacco (leaf) and timber: 15·5 million francs. Textiles contribute 12·4 million francs (woven goods 11·6, thread 0·8) and clothing 3·6 million. The next most important source of revenue is live stock (1·9 million francs) ; after this come paper (1·4), pottery (0·8), manufactured tobacco (0·7), and glass (0·5).

It will be observed that, compared to the value of each actually consumed or produced in the country, food-stuffs contribute a very high and industrial products a very low percentage of the total. It will be shown in the next section that the fiscal policy of Belgium represents a combination of two principles—free trade for industrial goods, and protection for agriculture.

THE COMMERCIAL POLICY OF BELGIUM

History

Four main periods must be distinguished in the history of Belgian commerce, beginning with the establishment of the kingdom in 1830.

(i) 1830–4: *Free trade.*—After the separation between Holland and Belgium the latter at first clung to the prevailing policy of free trade.

(ii) 1834–7: *Protection.*—The year 1834 inaugurated a movement for protective tariffs in favour of native agriculture. In 1842–7 this was extended to industry as well: the duties e. g. for iron were 80 per cent., for cotton 50 per cent., for glass 83 per cent., for chemical products 100 per cent. of the value.

(iii) 1847–81: *Free trade.*—The third period dates from 1847. As the Liberal Party gradually regained power the pendulum swung back towards free trade. The practical consequences of this movement were seen in the commercial treaty concluded with France in 1861, on the Anglo-French model, and markedly under the influence of Napoleon. Later commercial treaties down to 1875 were all based on the principle of free trade.

(iv) 1881–*present day: Industrial free trade, agricultural protection.*—The fourth period began with 1881 (new treaty with France). In this period a partial reversion to a protective policy is apparent.

The agriculturists in the country noted, in consequence of American competition in the corn-market, a drop in the price of corn, resulting in a fall in the rent and price of land. As their interests were strongly represented among the predominant Catholic party, customs duties were reinstated (on cattle, malt, and flour), along with other measures (impeding the entry of live cattle and foreign meat) designed for the protection of agriculture.

As regards industry, however, the Liberal policy was adhered to. The principle of free trade, in textiles and machinery especially, was energetically maintained even at the cost of considerable sacrifices, and the same principle was applied to goods in transit. Wherever possible the attempt was made to maintain the *status quo* of 1861. With the same intention the duties were taken off coke and coal (1892), and the textile and mechanical construction industries were favoured by the treaty with Germany and Austria-Hungary.

The following are some of the chief landmarks in the development of the commercial policy of Belgium:

1842–4. Commercial treaties with France, Holland, and the Zollverein, of which the first, known as the *convention linière*, gave mutual concessions to the French and Belgian textile industries, and represented the first appearance of free trade in the prevailing protectionism of the second period (1834–47). In 1844 the same mutual agreement was extended to Germany. In 1845 a similar understanding with France extended the principle to the mechanical construction industry.

1847. The Liberal Party came into power and began systematically to carry out the free trade policy which had been gradually appearing in the commercial treaties of recent years.

1851. Sweeping reduction of duties; 'most favoured nation' clause with Holland in relation to coke and coal. Commercial treaty with England, abandoning the protectionist principle asserted in 1844. By 1859 the opinion in favour of free trade was universal; only the spinning and weaving industries were still protected by tariffs.

1860. Commercial treaty with France revised. All duties reduced and placed on an *ad valorem* basis; 'most favoured nation' clause. In 1862 came new agreements with England and Holland, having the same general character; with the Zollverein in 1863. The same principles were further extended, especially with reference to iron and steel, in 1865.

1864. A law was passed by which goods coming for a short time into the country, to be industrially treated, should be free from import duty; and at the same time goods leaving the country for a short time for the same purpose should re-enter duty free. This greatly facilitated the work of many industrial firms specializing in one or more processes.

1870–1. A large number of low tariffs on food-stuffs, imposed in 1861, were abolished (viz. on salt, fish, cattle, meat, grain, rice, flour); in 1873 the duties on butter and other food-stuffs were abolished.

1875. Duties on cotton, jute, and hemp thread abolished, in spite of opposition from the spinners.

1882. First symptoms of return to the policy of protection, in the new commercial treaty with France. The policy adopted by France in 1860 had originated solely in the personal wishes of the Emperor; and the French nation, always protectionist at heart, reverted after 1871 to the policy from which it had been turned by the autocratic will of Napoleon III. The new import duties, intended to assist French industries, were in 1882 imitated to a certain extent by Belgium, especially with regard to coal, linen, and agricultural produce; otherwise the conditions established by the treaty of 1860 were not very seriously changed.

1887. Origin of the agricultural protection policy in Belgium. Bismarck's protective tariffs were now in operation. The Catholics took up the cause of agricultural protection, and in consequence came into power in 1884. In 1887 Mélot's law imposed duties on cattle, sheep, and meat greatly exceeding those removed in 1873. The intention of the Government was definitely to protect the Belgian farmer against the prevailing agricultural depression; and there was a good deal of opposition from the Liberals and a section of the Conservatives.

1892. Treaties with Germany and Austria-Hungary. The duties on horses, chicory, fruit, stone, coal, and textiles were abolished or reduced; transit trade was further facilitated, and the general tendency was to emphasize the principle of free trade. The agricultural tariffs were, however, not lowered, and were indeed increased in 1895, when oats, flour, malt, and margarine were also taxed. This event occasioned an open rupture between the agricultural and industrial interests. During the same period the sanitary regulations controlling the importation of cattle were made much more stringent, and provided for various medical tests, the cost of which was to be borne by the importer.

1859–1902. 'Most favoured nation' treatment extended to Sweden, Norway, Greece, Rumania, and other countries.

1903. International Sugar Conference at Brussels. The export premium combined with import duties had resulted in high prices for beet-sugar at home; in creating abnormal conditions in every country's market (except those of India and the U.S.A., which forbade the importation of any sugar assisted by a State bounty); and in a severe strain on the exchequer of the countries concerned. As a result of representations in this sense made at the Brussels Conference (1902) the Belgian law of 1903 took the matter in hand, with the result that the consumption of sugar at once increased very considerably.

1904. Revision of the 1892 treaty with Germany. Belgian agriculture found itself damaged by Caprivi's tariff, which was modified by Bülow in 1902, when increased duties were imposed on wheat, rye, oats, and agricultural produce generally.

1906–10. Sanitary regulations for the importation of cattle were again made more stringent. The import of cattle from France (1906), Holland (1907), U.S.A. (1908), Argentine and Denmark (1910), was forbidden.

Economic Results of the Present Policy

As we have seen, the commercial policy of the fourth or present period is characterized by an ambiguity of principle. On the one hand, in the case of industrial produce there is a tendency to maintain, or where it does not yet exist to establish, free trade, or at least to reduce tariffs to a minimum. On the other, there is a cry for heavy protective duties on foreign agricultural produce, with the exception of corn, a high duty on which was indeed demanded but has not yet been imposed.

The law of 1895 plainly illustrates the different treatment of industry and agriculture. This law reduced by 50–60 per cent. a number of duties, e. g. on cotton yarn and ordinary woollen yarn, on yarns woven from the hair of the various species of goats (chevre, alpaca, lama), as also on cast-iron and other metal goods, besides giving extra facilities for transit trade.

This reduction of duties was confined to goods in which agricultural producers had no interest. On the other hand, the same law imposed new protective tariffs on malt, flour, and other manufactured agricultural products as well as on butter, margarine, and milk; while the veterinary police-regulations controlling the import of foreign meat and cattle in every shape, which dated from 1887, were extended by quarantine and other sanitary preventive measures.

Subsequent legislation tended in the same direction, viz. the reduction of industrial duties and the obstruction of the import of agricultural produce by such provisions as the new tax on oats.

During the same period were effected the removal of the duties on coffee and tea, the reduction of the excise and abolition of the sugar bounty after the Brussels Sugar Conference of 1903, besides reduction of tariffs on machines and tools (1894), hardware, and dry goods (1893), alcohol (1896), materials for building and outfitting ships (1899). All these measures were intended primarily to reduce prices for the consumer.

In the two last decades the Catholic Government has consistently followed up the ideas of the Liberal policy as regards industry. The present duties on industrial products are low and must be considered only as moderate protective tariffs. The realization of this free-trade principle, notwithstanding the opposition of certain interested circles, has not only failed to arrest the vigorous development of the industries in question but has actually assisted it. Industrial free trade seems, as a whole, to have been entirely beneficial.

It must next be asked whether the protective policy in the case of agricultural produce has had as good an effect on agriculture as the free-trade policy has upon industry. To this question the answer appears to be in the negative. It will be remembered that the agricultural land of Belgium is parcelled out into extremely small plots, cultivated, and in many cases owned, by small farmers in conditions often resembling those of the market-garden rather than those of agriculture as practised on a large scale in other countries (see Chap. VII).

The crisis due to the flooding of the market with American grain was severely felt by the Belgian farmer, who tried to obtain a protective tariff on grain so as to maintain a virtual monopoly and so preserve his profits and avoid a fall in the rent and price of land. This attempt failed: protective tariffs were only imposed on oats and on certain manufactured products such as malt and flour.

Following the example of England, the Belgian agriculturists now began to devote themselves to stock-farming. In this they were directly assisted by the State, which imposed protective tariffs on live stock and meat. Prices were thus kept up, rents were preserved from falling, and the tariff was sufficient to secure an additional profit.

Agriculture as a whole, however, did not benefit by the rise of prices due to the protective tariffs. The smallest holdings, up to about 2½ acres, produce only for their own consumption; stock-keeping, with but few exceptions, would be out of the question, at all events as regards breeding of horses, fat cattle, and milch cattle for the market.

The same applies to a large class of farms running up to 7–8 acres. None of these small holdings are benefited by the rise of prices, because they do not produce for the market, but are frequently buyers themselves. Accordingly those who profit by the policy of protective tariffs represent only the largest farmers (15·1 per cent.) who cultivate more than 8 acres. In fact the inclusion of all holdings of over 8 acres is stretching a point; the profits of stock-farming are inconsiderable, as a rule, till a much higher figure is reached.

Moreover, it is this class which frequently changes its holdings by sale or purchase, or cuts up its land to satisfy the 'land hunger' of the small proprietor; it desires high average rents and a high yield in order to extort the maximum prices or rents from the small peasants.

Thanks to speculation in land the price of land rose considerably after 1850–60 and reached its highest point about the year 1880. But immediately after the crisis of 1890 prices again rose in consequence of the protective tariff enactments at the beginning of the nineties, and climbed so high that at the present time prices and rents are again as high as in 1880. But these high prices do not benefit the small proprietors, who do not want to sell; they only benefit the large farmers and speculators in land.

The whole of the protective legislation thus benefits only large and medium holdings. This applies equally to stock-farming. The import regulations forbid the import of cows and steers below 4 years of age. If it were permissible to import younger and therefore cheaper stock, the small peasant would also be able to import young cattle for fattening from France, and cheap calves from Holland, without an excessive expenditure. These young cattle could be fed at low cost, and thus provide cheap meat. But at present the small owner could only buy stock dear, owing to the import prohibitions or the high import duties. Consequently the profitable business of stock-fattening is confined to farmers with a good deal of capital.

It must further be asked whether the Belgian population at large benefits by the system of agricultural protection. When the question of erecting a tariff against imported meat and stock was raised, the Government argued that the exclusion of foreign produce would so stimulate home production as ultimately to lower prices. Belgian agriculturists supported this argument by guaranteeing for their part an increased production of cattle and reduction in the price of meat and other staple food commodities.

From the live stock censuses it appears that there has been an absolute increase of head, but this increase is so counterbalanced by the simultaneous increase of population and of the demand for meat that there can be no question of cheaper meat. On the contrary, prices, both wholesale and retail, have risen. In the three years between 1908 and 1911 this rise averaged 5 per cent.

The import statistics demonstrate the shortage of cattle even more clearly than the rise in the price of meat. The figures for cattle, meat, and commodities made of meat show a continual increase, despite the high duties and the sanitary regulations. The cause of this shortage was correctly ascribed to the protective tariffs, and their repeal was demanded. The Government, however, declined to reverse its policy, and in consequence the country is compelled to meet a heavy annual loss for the benefit of a few large proprietors.

It has been remarked above that Belgian industry has made vigorous progress under the influence of free trade. Year by year great quantities of raw materials and half-manufactured goods are imported from abroad, to leave the country again in a finished form after supplying an intermediate profit to the Belgian manufacturer. Part of this has to be applied to paying for the food-stuffs imported from abroad. It is thus a vital necessity for Belgium to compete in the world's industrial markets, in order to pay for the imported provisions. This she can only do by keeping down the cost of production, a point which shall enable her definitely to undersell her rivals ; and thus cheap labour is absolutely essential. We have already remarked (pp. 255–7) on the lowness of wages in Belgium, with its consequences of malnutrition and a low standard of industrial efficiency ; these points need not be here further insisted upon. It is, however, necessary to remark that the malnutrition of the Belgian industrial classes, in especial their deficient meat diet,[1] is connected with the policy of agricultural protection in two ways: first, because the price of meat is kept up to an almost prohibitive figure (it is estimated that the tariffs and sanitary regulations are responsible for an increase of 50–70 francs per head in the price of cattle); and secondly because, as we have seen, agricultural protection is at least a partial cause of low industrial wages, and these again of malnutrition especially in respect of the more costly articles of diet. The factors which place meat out of the poor man's reach produce, in a greater or less degree, the same result in the case of butter, milk, and margarine.

The view that the agricultural tariff reacts unfavourably on the general economic and commercial life of the nation is strongly expressed in the following terms by a memorial presented to Parliament by the Antwerp Chamber of Commerce, after its sitting of November 7, 1912:

'It is now undeniable that the obstacles to import bear so heavily on the price of sound meat that the supply is insufficient. The deficit of meat has entailed an enormous rise in prices. The consumer as a rule pays an excessive price; and this is simply due to the errors of a legislation which is an economic heresy in a country whose production never, either in normal times or in a crisis, suffices for its necessities in regard to food-stuffs. Evidence is universal, and the grievance crops up on every hand. Meat costs more than the people can pay for it; it is too dear for the working man, and even beyond the purse of the middle class. It is to be hoped that the Government and the People's Representatives will eventually adopt sounder views. . . .

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[1] The Fleming is by nature and inclination a large meat-eater. But in point of fact a number of careful investigations in the last fifteen years have demonstrated that the Belgian industrial worker eats about half as much meat as the English, and about half to one-third as much as the American working man.

'Unfortunately the echo raised by these protests in the commercial and economic world does not reach the ear of the Government. The people continue to pay much too high a price for meat.'

The memorial ends, 'We have not said what should be proclaimed aloud, and what commerçial circles have reiterated for years: the only effective means of cheapening meat in Belgium is to permit the unobstructed ingress of cattle from all countries and at all times, under strict but equitable control. That is the sole means of securing to Antwerp an adequate supply of meat at cheap and steady prices—the natural way of providing the people with abundant means of subsistence.'

COMMERCIAL LAW

Patents, &c.—Patents and trade-marks are in the hands of the Ministry of Industry and Labour. Patents are granted at the risk of the applicant, without preliminary examination of the alleged invention, and do not convey any guarantee as to the novelty, genuineness, or utility of the invention. Questions relative to the validity of letters patent are dealt with by the civil courts, but the Government has the right to annul a patent on the ground that the invention concerned is not being exploited in Belgium. Patents are subject to an annual tax on a sliding scale; the tax for the first year is uniformly 10 francs. The annual revenue from this tax is over half a million francs.

Trade-marks are registered according to the same principle, viz. without examination or guarantee of any kind, disputes being settled in the civil courts. The first person or firm to use a mark is given, by registration, the sole right to use it. The registration costs in all about 31 francs, inclusive of the tax which is 10 francs.

Designs for industrial machinery, &c., may be registered on the same principle, according to the provisions of a law of 1806. Drawings are sent in sealed, and only opened as evidence in case of litigation relating to the property of a design. A tax of 1 franc is paid on deposit, followed by a yearly payment of the same amount; or a composition of 10 francs may be substituted for the yearly payment.

Belgium is a member of the International Union for the protection of industrial proprietorship, constituted by the Convention of Paris in 1883, and was also a signatory of the agreement of April 14, 1891, providing for the international registration of trade-marks.

Company Law.—Belgian company law is described as combining in the highest attainable degree liberty with publicity, the prevention of fraudulent undertakings being thrown upon the latter element rather than upon specific enactments.

The law of 1873 recognizes five types of commercial association, as follows:

The *Société en nom collectif* is an association of which every member is responsible for every act of the company, and the company's title or designation contains the name of each member.

The *Société en commandite simple* consists, first, of one or more *commandités*, liable for every act of the company, whose name or names form the designation of the company; and, secondly, of a number of *commanditaires*, who contribute funds only. In the *Société en commandite par actions* the *commanditaires* are shareholders with limited liability, the *commandités* having, as before, unlimited liability.

The *Société anonyme* corresponds more or less to our ordinary joint-stock limited liability company. Its designation, which must be different from that of any other company, need not contain the name of any individual (hence the title *anonyme*) but may be simply descriptive.

The *Société co-opérative* consists of members holding non-transferable shares; its capital is not fixed, and may be indefinitely augmented by the issue of new shares as the demand arises.

The law regulating the formation of companies is very simple. Its main provisions are that a company must consist of not less than seven members; and that the nominal capital must be completely subscribed and 10 per cent. paid up. The names of promoters, the statutes of the company, and the annual statement of accounts must be made public; and a list of all shareholders who have not paid up in full must be published at least once a year, together with a statement of the amount each shareholder owes to the company.

Currency, Weights, and Measures

By the International Convention of 1865 and the subsequent Act of 1885 Belgium belongs to the Monetary Union which includes France, Greece, Italy, and Switzerland. In point of fact notes are in general use for most denominations over 2 francs, but the silver 5-franc piece and the gold 10- and 20-franc pieces are legally current, though not now struck. The silver 2-franc, franc, and half-franc pieces, struck under the provisions of the International Convention, are legal tender up to 50 francs. By the terms of the Convention Belgium is compelled to keep these coins in circulation to the total face value of 46·8 million francs.

There are also nickel 5-, 10-, and 20-centime pieces, and copper 1- and 2-centime pieces. These are not controlled by the Convention and are struck by the State as demand arises. Nickel is legal tender up to 5 francs, copper up to 2 francs.

In all foreign commerce Belgium employs a virtual monometallic gold standard, only her gold coinage (25·22 francs to the pound sterling at par) being legal tender for unlimited sums.

The mint is in the hands of a contractor, who receives payment according to a tariff fixed by royal decree.

With regard to weights and measures the metric system has been current in Belgium ever since the country was under French rule; it was adopted by the Dutch Government in 1816 and taught in the schools by a law of 1817. But it was only in 1820 that it was made obligatory; and the old units—the ell and the pound—remained firmly rooted in popular usage till declared illegal by the law of 1855. All weights and measures and instruments for weighing and measuring (including gas-meters) are subjected to initial, and thereafter to periodical, testing by officials of the State.

APPENDIX A

BIBLIOGRAPHY

The following list is not intended to supply a complete bibliography of the subject, but to indicate the main sources from which this volume has been compiled. A number of works which have been consulted are omitted, those alone being inserted whose information is either original or so put together as to give them an independent value. The bibliography has been so arranged as to show separately the sources for each chapter, and an attempt has been made to distinguish authorities of first-rate importance (other than censuses and other official publications which hardly need to be so distinguished) by an asterisk (*).

MAPS

This volume is accompanied by an Atlas designed to assist the reader in grasping the distribution of population, industries, minerals, &c., but not intended to supersede other maps. For use with this book the following maps are recommended.

Small scale, for general purposes :
- The Western Theatre of War (1915 : War Office, G.S.G.S. 3024) 1/1,000,000 (i. e. 15·78 miles to an inch) ; or :
- Europe 1/1,000,000 (1915–16 : War Office, G.S.G.S. 2758) sheets Paris (North M 31) and Frankfort (North M 32).

Larger scale, for topography :
- Belgium and France (War Office, G.S.G.S. 2364) 1/100,000 (i. e. 1·58 miles to the inch).
- Belgian official survey (1897–1903) 1/40,000 (i. e. about 0·63 mile to the inch).
- French official survey (edition of 1912) 1/200,000 (i. e. about 3·15 miles to the inch : a useful map covering almost the whole area).
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APPENDIX B

TABLE OF CHIEF TREATIES[1]

(*a*) SOVEREIGNTY

May 30, 1814. *Treaty of Paris.* Signatories:—Great Britain, Austria, Portugal, Prussia, Russia, Spain, Sweden, France. Subjects:—Sovereignty of the House of Orange; Rhine Provinces given to Prussia.

June 30, 1815. *Final Act of Congress of Vienna.* Same signatories, with the exception of France; same subjects.

November 15, 1831. *Convention of London.* Signatories:—Great Britain, Austria, France, Prussia, Russia, Belgium. Subject:—Independence of Belgium.

April 19, 1839. *Treaty of London.* Signatories:—Great Britain, Austria, France, Prussia, Russia, Netherlands. Same subject.

May 11, 1867. *Treaty of London.* Signatories:—Great Britain, Austria, Belgium, France, Italy, Netherlands, Prussia, Russia. Subject:—Luxemburg and Limburg.

(*b*) BOUNDARIES

May 30, 1814. *Treaty of Paris.* Signatories, see above. Subject:—Boundaries of France, Netherlands, Prussia, &c.

June 9, 1815. *Final Act of Congress of Vienna.* Signatories, see above. Same subject as the foregoing.

July 20, 1819. *General Treaty of Frankfort.* Signatories:—Great Britain, Austria, Prussia, Russia. Subject:—Details of above frontiers.

July 2, 1824. *Boundary Treaty of Meppen.* Signatories:—Hanover and the Netherlands. Subject:—Details of boundary.

November 15, 1831. *Convention of London.* Signatories, see above. Subject:—Belgo-Dutch frontier.

April 19, 1839. *Treaty of London.* Signatories, see above. Subject:—Limits of Belgium and division of Luxemburg.

November 5, 1842. *Boundary Treaty of The Hague.* Signatories:—Belgium and the Netherlands. Subject:—Details of frontier.

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[1] Other than commercial treaties, for which see pp. 560–4.

(*c*) UNION AND SEPARATION OF BELGIUM AND HOLLAND

July 21, 1814. *Act of Acceptance of Sovereignty* (the Treaty of the Eight Articles—Annex 10 of the Final Act of the Congress of Vienna) at The Hague. Signatory, Netherlands. Subject :—Union of Belgium and Holland.

November 15, 1831. *Convention of London.* Signatories, see above. Subject :—Separation of Holland and Belgium.

April 19, 1839. *Treaty of London.* Signatories, see above. Same subject as the foregoing.

(*d*) THE SCHELDT AND THE RHINE

May 30, 1814. *Treaty of Paris.* Signatories, see above. Subject :—Navigation of the rivers.

June 9, 1815. *Final Act of Congress of Vienna.* Signatories, see above. Same subject as the foregoing.

March 31, 1831. *Convention of Mainz.* Signatories :—the riverine States of the Rhine. Subject :—Navigation of the Rhine.

November 15, 1831. *Convention of London.* Signatories, see above. Subject :—Navigation of the Rhine and Scheldt.

April 19, 1839. *Treaty of London.* Signatories, see above. Same subject as the foregoing.

July 16, 1863. *Treaty of Brussels.* Signatories :—Great Britain, Austria, Brazil, Chile, Denmark, France, Hanover, Italy, Oldenburg, Peru, Portugal, Prussia, Russia, Spain, Sweden, and Norway, Turkey, Hanse towns, Belgium. Subject :—Redemption of Scheldt tolls.

October 17, 1868. *Convention of Mannheim.* Signatories :—Baden, Bavaria, France, Hesse-Darmstadt, Netherlands, Prussia. Subject :—Navigation of the Rhine.

(*e*) NEUTRALITY OF BELGIUM AND LUXEMBURG

November 15, 1831. *Convention of London.* Signatories, see above. Subject :—Neutrality of Belgium.

April 19, 1839. *Treaty of London.* Signatories, see above. Same subject as foregoing.

May 11, 1867. *Treaty of London.* Signatories, see above. Subject :—Neutrality of Luxemburg.

July 17, 1870. Declarations made by France and Prussia. Subject :—Neutrality of Luxemburg.

August 9, 1870. *Treaty of London.* Signatories :—Great Britain and Prussia. Subject :—Neutrality of Belgium.

August 11, 1870. *Treaty of London.* Signatories :—Great Britain and France. Same subject as foregoing.

APPENDIX C

LIST OF MAPS IN THE ATLAS

1. Physical.
1 A. Rainfall.
2. Geology.
3. Density of Population.
4. Languages.
5. Woods and Forests.
6. Minerals.
7. The Lorraine–Saar Minefield.
8. The Western Coalfield of Belgium.
9. The Eastern Coalfield of Belgium.
10. The Campine Coalfield.
11. The Westphalian Coalfield.
12. The Aachen and Mechernich Minefields.
13. Density of Industries in Belgium.
14. Chemical Works in Belgium.
15. Metallurgical Industries in Belgium.
16. Pottery Industries in Belgium.
17. Paper-mills and Glass-works in Belgium.
18. Railways.
19. Waterways.

INDEX

Note.—Subjects which can readily be found by means of the analytical Contents have not been indexed.

A

Aa R. (Belgian), 23
Aa R. (French), 28, 535, 537, 540
Aachne :
    agriculture, 340, 341
    communications, 521, 522
    industry, 436, 512, 516
    mineral resources, 377, 413
Aachen, Convention of, 245
Abscon, 498
Achiet-le-Grand, 523
Acoz, 464
Adenau, 74
Adolphus of Nassau-Weilburg, 201
Aerschot, 95
Ahr R., 28, 50
Ahr valley, 74, 75, 344, 345
Ahrweiler, 75
Aire, 496, 540
Aire R., 24
Aiseau, 435
Aisne R. (Belgian), 26
Aisne R. (French), 29, 536, 540
Aisne valley, 71, 522, 542
Aix-la-Chapelle, Treaty of, 135, 171
Albert, 501
Alexander I, 174
Alexander of Parma, 127
Alf R., 51
Alf valley, 345
Algeria : trade with Belgium, 433, 457, 458
Alost, 93, 303, 452, 453
Alost *arrondissement*, 66, 93
Alpine race, 59
Altenberg : *see* Moresnet
Alzette R., 27, 406
Amblève R., 26
America : trade with Belgium, 457
America : trade with France, 504
Amiens, 522, 523
Amiens, Treaty of, 138
Amongies : language, 93
Ancre R. (Belgian), 21
Ancre valley (French), 523
Andenne, 464, 465, 470, 478
Anderlecht, 454
Anderny, 402
Angleur, 436, 538
Anglo-Belgian plateau, 16 19
Aniche, 498
Anjou, Duke of, 128
Anor, 524
Anoux, 402
Ans, 468
Antwerp :
    communications, 521, 523, 537, 540–544
    history, 121, 124, 127
    industry, 437, 439, 440, 442, 443, 454, 462, 473, 480
    language, 82, 90, 93
    population, 68, 78
    social conditions, 263
Antwerp *arrondissement* :
    language, 93
    population, 66
Antwerp province :
    agriculture, 306
    industry, 428, 449, 452
    mineral resources, 361
    population, 65
Anzin, 494, 498
Ardennes :
    agriculture, 303, 311, 312, 314, 315, 322, 323, 328
    climate, 56, 58
    communications, 522 539, 542
    geology, 15, 19
    industry, 431, 478
    physical geography, 13, 14, 49
Ardennes, *continued* :
    population, 66, 67, 73, 323
    social conditions, 251
    canal, 540, 542
Argentine : trade with Belgium, 446, 462, 551–554, 556
Arlon :
    communications, 522
    language, 85, 87
Arlon *arrondissement* :
    agriculture, 310
    language, 80, 87, 89, 99
Arlon region :
    agriculture, 312, 323
    physical geography, 52
Armada, 128
Armentières, 493, 496
Arras, 325, 500, 523
Arras *arrondissement*, 71
Artevelde, Jacob van, 118
Artois, 14, 324, 325, 542
Astenet, 435
Ath, 453, 537
Ath *arrondissement*, 96
Athus, 88, 89, 407, 433
Attert, 88
Attert R., 27
Aubange, 88, 89
Aubel, 86, 99
Auboué, 401
Audenarde, 90, 93
Audenarde *arrondissement*, 93
Augsburg, Transaction of, 125
Aumetz plateau, 405
Australia :
    trade with Belgium, 446
    trade with France, 326, 504
Austria, trade with Belgium, 468
Authie R., 29
Avesnes *arrondissement*, 70, 432

Avesnes-le-sec, 502
Avesnes-les-Aubert, 502
Avril, 402
Axel, 525

B

Bachy, Mont de, 38
Baden, 99
Baden, Treaty of, 132, 172
Baelen, 85, 86
Baelen-usines, 436
Bailleul, 317, 492
Bâle, Treaty of, 225
Bapaume plateau, 501
Bar R., 24
Barmen, 513, 516
Baroeul district, 38
Barrier Treaties, 132
Barthélemy, 224
Bas-Heylissem, 95
Basse Sambre basin, 358, 359, 361, 424
Bassin de Charleroi : *see* Charleroi basin
Bassin du Centre : *see* Centre district
Bassins-Houillers railway, 526
Bastogne, 89
Bastogne *arrondissement*, 66, 88, 99
Baudour, 458, 464, 465, 469, 472
Baune, 465
Bazonville, 402
Beaumont, 451
Beauvois, 503
Beez, 411
Beho, 80, 87, 99
Belgian Plain, 14, 18
Belgian Revolution, 143
Bellevue, 401
Berchem, 454
Berg, Duchy of, 205
Berkeinde, 363
Berlin, Convention of, 136
Bertincourt, 541
Bertrix, 430
Bertry, 503
Bethencourt, 503
Béthune, 324, 494, 497
Bevillers, 502
Biache-St. Vaast, 501
Bierghes, 465
Bismarck, 163, 189, 190, 191, 195, 237, 240, 243
Bitburg, 75
Blankenberghe, 90, 544
Blaton–Ath canal, 541
Bleibach valley, 417, 418
Bleiberg (Belgian), 415, 435
Bleiberg (German), 418
Bleibuir, 418
Blommaert, 280
Bochum, 381
Bochum basin, 382
Bohain, 501, 502
Bohéries, 504
Bonn, 340, 512, 516
Bonnert, 88
Bonnine-Gelbresée, 411
Boom, 82, 94, 437, 464, 466
Borinage : *see* Couchant de Mons
Bouffioulx, 465, 470
Bouillon, 85, 99
Boulogne, 102, 522
Boulogne *arrondissement*, 71
Boulonnais, 30, 71, 323, 324, 369
Bourlers, 465
Bourre R., 20
Bouvines, battle of, 116
Brabant :
  agriculture, 306, 312, 318
  climate, 56
  industry, 447–449, 452, 454, 466
  language, 94
  mineral resources, 412
  physical geography, 40
  population, 65, 67
Brabant–Hesbaye watershed, 536, 541
Braine-l'Alleud, 451, 452
Braine-le-Comte–Ghent railway, 526
Brandenburg, elector of, 211
Brazil, trade with Belgium, 481
Breda, 522
Breitenfeld, battle of, 213
Briey, 436
Briey basin, 401
Briey plateau, 53, 332, 431, 524
Brohl valley, 345
Broqueville, Baron de, 161
Bruges :
  communications, 535, 540, 543, 544
  history, 115, 121, 124
  industry, 433, 437, 454, 470, 478
  language, 90, 91
Bruges *arrondissement* : language, 90
Brühl, 385
Brussels :
  communications, 521–523, 541, 543, 545
  industry, 437, 439–443, 452, 454, 456, 462, 466, 472, 473, 478, 480
  language, 79, 82, 90, 94
  population, 68, 78
  social conditions, 263
Brussels *arrondissement*, 66, 94
Brussels-Charleroi canal, 541
Brussels Ship Canal, 545
Brussels–Willebroeck canal, 535, 537
Budel, 436
Buironfosse, 329
Burgundy, House of, 119, 170 208
Busigny, 502

C

Calais, 492, 521–523, 546, 547
Cambrai, 325, 501, 523, 537, 541
Cambrai *arrondissement*, 71
Cambrai, Treaty of, 170
Cambrésis, 30, 71, 317, 324, 325, 501
Cambrésis–Artois downs, 16
Camphausen, 235
Campine :
  agriculture, 311, 312, 314, 315, 320
  climate, 56
  communications, 525, 540
  industry, 435, 437, 457, 459, 463–466
  language, 81
  mineral resources, 411
  physical geography, 44
  population, 66
  social conditions, 251
Campo Formio, Treaty of, 225
Canada, trade with Belgium, 445, 471, 478
Canal de l'Est, 538
Canche R., 29
Capellen, 336-339
Carembault, 37
Carnot, 224
Carolingian dynasty, 110
Cassel, hill of, 35, 36

- Castlereagh, 174
- Catholic party, 156, 158, 161, 284
- Caudry, 502, 503
- Caullery, 503
- Centre district:
  - communications, 541
  - industry, 423, 425, 437, 439, 441–443, 465
  - language, 84, 96, 97
  - mineral resources, 358, 359, 361
  - population, 67, 68
  - social conditions, 261
- Ceylon: trade with Belgium, 468
- Chalk downs, 14
- Champagne, 522
- Champion, 411
- Charlemagne, 110
- Charleroi:
  - communications, 525, 538, 541
  - industry, 432, 433, 437, 439, 441–443, 456, 465, 468, 473
  - language, 84, 89
  - mineral resources, 357
  - social conditions, 261
- Charleroi *arrondissement*, 66, 97
- Charleroi basin:
  - communications, 541
  - industry, 423, 425
  - language, 84, 97
  - mineral resources, 358, 359, 361
  - population, 67, 68
- Charles V, 123, 210
- Charles VI, 133
- Charles of Lorraine, Duke 133
- Charles the Bold, 209, 121
- Charles Theodore, 218
- Charleville, 506
- Charriaut, 292, 294
- Château-Regnault, 506
- Châtelet, 464, 465, 470
- Chiers R, 23, 53, 524
- Chigny, 329
- Chimay, 466
- Chimay railway, 524
- Chimay valley, 524
- Christmas Island: trade with Belgium, 458
- Clabecq, 433
- Clarence R., 20
- Clary, 503
- Clervaux, 73, 336–339, 509
- Cleves, 74, 80, 516
- Cleves, Duchy of, 205
- Clovis, 109
- Coblenz, 522, 523, 539
- Coblenz *Kreis*, 75
- Coblenz *Regierungsbezirk*, 340, 341
- Cochem, 75
- Cologne:
  - communications, 521–523, 542, 546
  - history of, 207
  - industry, 512, 516
  - mineral resources, 384
- Cologne *Kreis*, 340
- Cologne *Regierungsbezirk*, 340
- Cologne Electorate of, 205
- Comines, 496, 537, 540
- Commern, 418
- Compiègne, 523, 540
- Condroz:
  - agriculture, 303, 312, 321
  - climate, 56
  - communications, 522
  - physical geography, 47
  - population, 67, 322
- Conflans, 333, 524, 540
- Congo: trade with Belgium, 553, 555, 557
- Co-operation, 162, 343
- Côtes de Meuse, 54, 330, 431, 506
- Côte-d'Or, 317
- Couchant de Mons:
  - industry, 422, 425, 437, 439, 442
  - language, 84
  - mineral resources, 357–359, 361
  - population, 67, 68
- Coucke, 284
- Couillet, 456
- Courchelettes, 499
- Courtrai:
  - communications, 523
  - industry, 452, 453, 463, 465, 470
  - language, 90, 92
  - population, 78
- Courtrai *arrondissement*, 66, 92
- Courtrai, battle of, 117
- Cousolre, 432, 500
- Crefeld, 378, 511, 516
- Croix, 493
- Cromwell, 131
- Crops, 302, 303, 316–322, 324–338, 340, 343, 346–348
- Crupilly, 329
- Crusne R., 24, 53
- Crusne basin, 404
- Cureghem, 448, 454

D

- Dampremy, 77
- Daumont, 299
- Death duties, 309
- De Decker, 282
- Deerlyck, 453
- Demer R., 22, 535, 538
- Denain, 494, 498
- Dendre R., 21, 22, 43, 535, 537, 541
- Dendre valley, 69, 478
- Denmark: trade with France, 326
- Derby, Lord, 194
- de Tarsy R., 25
- Deule R., 20
- Deule valley, 326
- Deynze, 453
- Diekirch, 73, 336, 337, 339, 509
- Differdange-Rodange *minette* field, 406
- Diest, 90, 95, 538
- Dinant, 89, 98, 452, 524
- Dinant *arrondissement*, 66, 97
- Dison, 451
- Dixmude, 91
- Dixmude *arrondissement*, 91
- Dolhain, 414
- Donchéry, 506
- Dorignies, 499
- Dortmund, 381
- Dortmund-Ems canal, 240, 539, 542
- Dottignies, 92
- Douai, 541
- Douai *arrondissement*, 70
- Doullens, 523
- Drocourt, 369
- Dudelange, 407
- Duffel, 82, 451
- Duisburg, 381, 515
- Dumouriez, 136
- Dunkirk, 492, 521, 522, 546
- Dunkirk *arrondissement*, 70
- Düren, 388
- Düsseldorf, 513, 515, 523
- Düsseldorf *Regierungsbezirk*, 340, 341
- Dutch language in Belgium, 275, 277
- Dyle R., 22, 538
- Dyle valley, 428

E

East Indies: trade with Belgium, 451
Ecaillon R., 21
Ecaussines, 430
Echternach, 73, 336, 337
Echternach *canton*: agriculture, 336, 337
Edward I, 117
Edward III, 118, 208
Eecloo, 90, 451, 453
Eecloo *arrondissement*, 92
Eecloo–Bruges railway, 526
Effry, 504
Eglancourt, 329
Eifel:
  agriculture, 343, 346
  climate, 56, 58
  communications, 542
  geology, 15
  industry, 431, 516
  mineral resources, 412
  physical geography, 13, 14, 49
  population, 64, 73–75
Eifel watershed, 536, 542
Eighteen Articles, 146
Elberfeld: industry, 513, 516
Elincourt, 503
Elizabeth, 128
Elz R., 51
Emsch basin, 382
Endert R., 51
Enghien, 96
Engis, 416, 435
England:
  relations with Belgium, 107
  trade with Belgium, 306, 318, 321, 434, 440, 448, 450, 458–462, 468, 471
  trade with France, 329
Ensival, 451
Escaudoeuvres, 501
Escaut R., 20, 22, 535, 540, 541. *See also* Scheldt R.
Escaut valley, 56, 463, 464, 498
Escaut–Oise canal: *see* St. Quentin Canal
Esch, 72, 335, 339, 509
Esch–Rumelange *minette* field, 406
Escrebieu, 38
Espierres, 92
Esquehéries, 329
Essen, 73, 381
Essen basin, 382
Estaires, 496
Etaples, 522
Etreux, 504
Eupen, 74, 103, 512
Euskirchen, 523

F

'Faille du Midi', 360
'Faille eifelienne', 360
Fallersleben, Hoffmann von, 280
Famenne, 48, 56, 67, 322
Fauvillers, 88
Fensch valley, 405, 436, 512
Ferrain, 37, 327, 492, 494
Finland: trade with Belgium, 478.
Flanders:
  agriculture, 303, 312, 317
  climate, 56
  industry, 451, 466, 468, 492
  language, 81, 101
  physical geography, 34
  population, 67, 66
Flanders province, East:
  agriculture, 306
  industry, 447, 449, 450, 452, 453
  population, 65
  social conditions, 256
Flanders province, West:
  industry, 439, 447, 449, 451–453, 462
  population, 65
Flémalle-Haute, 525
Flemings, 59, 61
Flemish language in Belgium, 80, 83, 101, 102, 275
Flemish movement, 101, 167, 272
Flemish-speaking provinces, birth-rate and death-rate, 77
Fleurus, 410, 461
Fleurus, battle of, 137
Floriculture, 307, 329, 330
Flushing, 127, 521, 522, 546, 547
Fontainebleau, Treaty of, 1785, 176
Fontenoy, battle of, 135
Forest, 453
Fourmies, 504, 524
Fouron St. Martin, 98
Fouron St. Pierre, 98
Fraire, 411
France:
  trade with Belgium, 305, 318, 399, 431, 434, 441, 450, 458–461, 465, 468–472, 551-558
  trade with Germany 405, 406
Franchise Law, Belgium, 152, 157
Franchise Law, Luxemburg, 202
Francis I, 124, 210
Franco-German War (1870), 164, 195
Francsmannen, 250, 251
Frankfort, Treaty of, 1819, 232
Frankfort, Treaty of, 1871, 199
Franks, the, 100, 109
Frederick III, Emperor, 122
Frederick William IV, 234, 242
French Consulate (1799–1804), 138
French Empire (1804–14), 138
French language:
  in Belgium, 79, 81, 101, 102, 273, 279, 289
  in German Lorraine, 104
  in Luxemburg, 189
  in Malmédy, 103
French Revolution, 137, 222, 273
Frère-Orban, 157
Fruit cultivation. 306, 318, 321, 324, 338, 346, 348
Fumay, 431
Furnes, 91
Furnes *arrondissement*, 91

G

Geete R.: *see* Jette R.
Gelders, 74
Geleen, 387
Gelsenkirchen, 381
Gemmenich, 85, 86, 99
Genck, 45, 96, 525
Gentenne R., 22
German language:
  in Belgium, 80, 85, 282
  in Malmédy, 103

Germany:
  relations with Flemish movement, 290, 293
  trade with Belgium, 302, 303, 306, 321, 405, 431, 433, 434, 440, 450, 451, 454, 457–460, 462, 468–472, 481, 551–558
  trade with France, 334, 399
Gerolstein, 523
Gheel, 451
Ghent:
  agriculture, 307
  communications, 521–524, 535, 537, 540, 543, 545
  history, 115
  industry, 437, 439–443, 447–449, 451–453, 466, 471, 478, 480
  language, 84, 92
  population, 69, 78
  social conditions, 256, 263
Ghent *arrondissement*, 66, 92
Ghent–Ostende canal, 540
Ghent–Terneuzen railway, 524
Gileppe R., 26
Giraumont, 401
Givet, 506, 524, 525
Gladstone, 163
Goethals, 284
Gohelle, 38, 39, 70, 328
Görres, 242
Gottessegen, 418
Goutelle valley, 506
Gouzeaucourt, 503
Grammont, 93
Granite, 19
Gravelines, 70, 546, 547
Greece: trade with Belgium, 476
Grevenmacher, 335, 337, 339
Grimlinghausen, 541
Grimm, Jacob, 280
Guillaume–Luxembourg railway, 197
Gustavus Adolphus of Sweden, 213
'Gutland', 72, 335

H

Habsburg, House of, 170, 209
Hageland plain, 41
Hainaut:
  agriculture, 303, 319, 327
  physical geography, 32–33, 42
  population, 67, 70
Hainaut province:
  industry, 426, 430, 439–441, 447–449, 452, 453
  mineral resources, 357, 412
  population, 65
Haine valley, 358, 465, 537, 541
Halanzy, 89, 407, 433
Hal–Ath and Tournai–Frontier railway, 526
Halluin, 496
Hamelius, Paul, 278
Hamme, 450, 453, 454
Hamont, 436
Hansemann, 235
Hanzinelle, 464
Harly, 503
Hasselt, 96, 469, 540
Hasselt *arrondissement*, 96
Hasselt–Maeseyck railway, 525
Hastière, 524
'Hautes Fagnes', 49, 322
Haut-Heylissem, 95
Hautmont, 499
Hautrage, 465, 467
Hazebrouck, 522
Hazebrouck *arrondissement*, 70
Heerlen, 387
Heiligenbronn, 375
Helchin, 92
Hellemmes, 494
Helpe, R., Grande, 25
Helpe R., Petite, 25
Hemixem, 82, 94, 469
Henis, 465
Henri-Chapelle, 85, 86, 99
Henry, Prince of the Netherlands, 187
Henry II of France, 210
Henry IV. of France, 129, 210, 211
Herbeumont, 430
Herck R., 22
Herenthals, 94, 437, 523
Hermannsberg, 374
Hermeton R., 24
Herseaux, 454
Herstal, 443
Herve, 44, 56, 67, 320, 321
Hesbaye:
  agriculture, 312, 319
  Climate, 56
Hesbaye, *continued*:
  communications, 526, 541
  language, 84, 98
  physical geography, 43
  population, 67
Hesdin, 324
Hirson, 71, 504, 505, 522, 524
Hoboken, 82, 94, 437, 439
Hocheifel, 50, 74, 75, 346, 348, 516
Hodimont, 451
Hohe Acht, 51
Hohe Venn, 50, 56, 74, 346
Holland:
  relations with Flemish movement, 291
  trade with Belgium, 305, 306, 431, 434, 448, 450, 458, 468, 470, 472, 551–555, 557, 558
  trade with France, 326
Holy Roman Empire, 107
Hombourg, 85, 86, 99
Homécourt, 401
Honnechy, 503
Hook, The, 522
Houthem, 91
Hoyoux valley, 47, 433
Hulst, 525
Hundred Years' War, 117
Hunsrück, 13, 57, 516
Hussigny, 403
Huy, 89, 437, 478, 526
Huy *arrondissement*, 98

I

Inde basin, 379
India: trade with Belgium, 434, 553, 554, 556
Ingelmunster, 454
Isebergues, 496
Iseghem, 453
Italy: trade with Belgium, 441, 451, 461, 470

J

Jagow, Herr von, 165
Japan: trade with Belgium, 458, 558
Jarnisy plateau, 53, 332
Jemappes, 433
Jemappes, battle of, 136
Jemeppe, 77, 456, 468
Jette R., 22
Jette valley, 428

Jeumont, 525
Joeuf, 401
John Cockerill Company, 438
John the Fearless, 119
Jonction belge-prussienne railway, 526
Joseph II, Emperor, 134, 176
'Joyous Entry', 116, 134
Jülich, 388
Jülich, Duchy of, 205
Jumet, 77

K

Kaisersesch, 512
Karsman, 283
Kayl stream, 406
Keldenich, 418
Kemmel, Mont, 35
Kempenland, 44
Kerkrade, 387, 388
Kleinrosseln, 375
Königsberg, 374
Kyll R., 50, 51
Kyll valley, 74, 347
  For Koblenz, &c., *see under* C

L

Laach district, 75. *See also* Rheinvoreifel
Laacher See, 52
La Capelle, 504
Lacque R., 20
Laek R., 23
La Gorgue, 496
La Louvière, 84, 96, 433, 469
La Madeleine, 493
La Marck, 211
Lambres, 499
Landrecies, 538, 540–542
Landres basin, 401
Lands of the Generality, 175–176
Language-frontier, 79, 100, 108
Laon, 71, 522, 524
Lasne R., 22
Lavagueresse, 329
Lavaux, 524
Lawe R., 20
Le Cateau, 501, 502, 523
Le Catelet, 502
L'Écluse, 95
Ledeganck, 281
Lens, 494, 497, 523
'L'entre Sambre et Meuse', 47
Leopold II, Emperor, 134
Leopold of Saxe-Coburg, 146
Lesse R., 24, 539
Leuchtenberg, Duc de, 145
Liane R., 29
Liberal Party, 156, 158, 284
Liége:
  communications, 521–523, 525, 538, 540
  history, 121
  industry, 432, 433, 437, 439–446, 457, 458, 461, 465, 468, 473
  language, 84, 98
  population, 69, 253
  social conditions, 256, 261, 263
Liége *arrondissement*, 66, 98, 357
Liége basin, 358, 359, 361, 410, 424, 425
Liége province:
  agriculture, 306, 307
  language, 98
  mineral resources, 357, 409, 411, 412
  population, 65
Liégeois – Limbourgeois railway, 526
Lienne R., 26
Lierre, 94
Lieser R., 51, 345
Liévin, 369
Ligne des Flandres railway, 526
Ligny (Belgian), 410
Ligny (French), 503
Lille, 102, 436, 493, 494, 521–523
Lille *arrondissement*, 70
Lillers, 324
Limbourg, 89, 99
Limbourg province:
  language, 82, 95
  mineral resources, 361, 412, 428, 439
  population, 65
  social conditions, 251
Lippe R., 539
Lippe basin, 381, 382
Loison R., 24
Lokeren, 450
Lommel, 45, 436
London, Convention of 1831, 146, 147
London, Treaty of, 1839, 181, 186, 199
London, Treaty of, 1867, 199
Longlaville, 403
Longwy, 436, 506, 524
Longwy basin, 403
Lontzen, 415, 435
Loos, 493
Lorraine plateau, 14, 17, 57, 71, 542
Lorraine, Belgian: *see* Arlon
Lorraine, French, 330, 431, 506
Lorraine, German, 80, 104, 373, 375, 401, 405
Lothair, 111
Lothair II, 111
Lotharingia, 111
Louis XI, 121
Louis XIV, 132, 170, 214, 215
Louis Philippe, 144, 146
Lourches, 498
Louvain, 90, 95, 306, 437, 439, 451, 522
Louvain *arrondissement*, 94, 95
Louvain–Dyle canal, 535, 537
Luigne, 92
Lunatic asylums, 270
Lunéville, Treaty of, 222, 226
Luxembourg province:
  industry, 428, 430, 433, 439
  language, 98, 99
  mineral resources, 411, 412
  population, 65
Luxembourg railway, 526
Luxemburg, Grand Duchy of: 56, 64, 119, 399, 433, 555, 556
Luxemburg (*canton*), 335–339
Luxemburg (town): industry, 436, 508, 521, 522, 524
Lys R., 20, 496, 535, 540
Lys valley, 37, 69

M

Maas R.: *see* Meuse R.
Maastricht, 436
Madrid, Treaty of, 170
Maeseyck, 90, 96
Maeseyck *arrondissement*, 96
Maeterlinck, 288
Maggesland, 45, 66, 67, 318
Maifeld plateau, 51, 346, 348
Mainville, 402
Mainz, Electorate of, 206
Mairy, 402

Maison Blanche mine, 436
Mâle, Louis de, 118
Malines :
  agriculture, 306
  communications, 523, 538
  industry, 437, 439, 451, 454
  language, 90, 94
Malines *arrondissement*, 66, 94
Malines–Terneuzen railway, 525
Malmédy, 74, 80, 103
Manroy, 503
Marche *arrondissement*, 66, 99
Marchienne-au-Pont, 525
Marchiennes, 39, 499
Marcinelle, 423
Marcq R., 22
Marengo, battle of, 226
Maretz, 503
Marfontaine, 329
Marie Adelheid, Grand Duchess of Luxemburg, 201
Market gardening, 306
Marlagne district, 47
Maron–Val-de-Fer mine, 400
Marquise, 500
Masnières, 502
Maubach, 345, 418
Maubeuge, 499, 523
Maximilian, 122
Mayen, 75, 512
'May Laws' of 1874, 237
Mazarin, 170, 210, 214
Mechernich, 413, 417, 418, 512
Mehaigne R., 25
Meix-le-Tige, 88, 89
Mélantois, 32, 38, 325, 492
Melde R., 20
Membach, 85, 87, 99
Merovingian dynasty, 110
Meriville, 496
Mersch, 335–337
Messines – Wytschaete ridge, 35
Metz, 105, 334, 522, 523, 539, 542
Meurthe valley, 400
Meurthe-et-Moselle department, 338
Meuse R., 24, 26,
  communications, 535, 536, 538, 540–542
  navigation, 538
Meuse river system, 23
Meuse valley :
  agriculture, 330
  communications, 522–525
  industry, 432, 435, 465, 505, 506
  mineral resources, 357, 358, 386–388, 410, 416
  population, 71
Meuse–Escaut canal, 540
Meuse–Rhine watershed, 536, 540.
Mexico, trade with Belgium, 446
Mézières, 506
Mézières *arrondissement*, 71
Mill, 387
Moëres 34
Moll, 540
Moll Nethe R., 23
Moncheaux, Mont de, 38
Mondrepuis, 504
Mons :
  communications, 523, 525
  industry, 441, 458, 465, 466, 468
  language, 84, 89, 97
Mons *arrondissement*, 66, 96, 357, 473
Mons-en-Pévèle, 38
Mont des Cats, 35
Montjoie, 74, 103, 512
Montmédy *arrondissement*, 71
Mont Noir, 35
Montreuil, 324
Mont Ronge, 35
Mont-Tonnerre, Department of, 227
Montzen, 85, 86, 99
Moresnet, 85, 86, 99, 244, 246, 415 435
Morialmé, 411
Mormal forest, 327
Mortgages, 308, 309
Moselberge, 51, 347
Moselle R., 26, 27, 535, 536, 539, 542
Moselle valley :
  agriculture, 334, 338, 344, 345
  communications, 523
  geology, 18
  industry, 436, 510, 512
  mineral resources, 400, 401, 404
  population, 72
Moselvoreifel, 75, 346, 347
Mouscron, 92, 451–454, 523
Moutiers, 401
Mülheim, 381
München–Gladbach, 512, 516
Münster, Treaty of, 130, 175
Murville, 402
Musson, 89, 407, 433

N

Nahe valley, 344
Namèches, 411
Namur :
  communications, 521–523, 525, 526, 538
  industry, 437, 442, 465
  language, 89, 97
Namur *arrondissement*, 97, 357, 473
Namur basin, 425
Namur province :
  industry, 426, 433, 439
  language, 97
  mineral resources, 357, 409, 410, 412
  population, 65
  social conditions, 251
Nancy, 334, 506, 522, 524
Nancy basin, 400
Napoleon, 138–140, 174, 225, 229
Napoleon III, 163, 189, 192
Nassau, House of, 180
Neerpelt, 436
Nemours, Duc de, 145
Nethe R., 535
Nethe R., Grande, 22, 538
Nethe R., Petite, 23, 538
Nethe river system, 22
Nethe valley, 66, 464
Neuburg, Count Palatine of, 211
Neufchâteau, 89, 522
Neufchâteau *arrondissement*, 66, 99, 310
Neuf-fossé canal, 537, 540
Neuss, 516, 541
Neuwied plain, 513
Niedermendig, 431, 512
Niel, 82
Niers R., 26, 541
Nieuport, 467, 543, 545
Nil R., 22
Nimwegen, Treaty of, 171
Ninove, 90, 93
Nivelles *arrondissement*, 97, 447

Noigne R., 26
Nord basin, 368
Nord-Belge railway, 525
Nord Canal, 541
Nord *département*, 365, 522
'Nordic' race, 59
Norway: trade with Belgium, 433, 457, 472, 478, 557
Nouvion, 329, 504
Nouzon, 506

O

Oberhausen, 515
Oise R., 29, 536, 537, 540, 541
Oise valley, 504, 523
Oostmalle, 45
Opgrimby, 363
Oploo, 387
Opoeteren, 525
Orleans, House of, 121
Orme R., 22
Orne basin, 401
Orne R., 26, 53
Orne valley, 405, 436, 512
Orron, 93
Ösling plateau, 73, 335, 346
Ostende:
    communications, 521–523, 543–545
    history, 133
    industry, 470
    language, 81, 90
    population, 77
Ostende *arrondissement*, 91
Ostrevant district, 37, 38, 70, 328, 497
Othain R., 24
Otto I, 112
Ottweiler, 516
Ottweiler coal-beds, 374
Our R., 27
Ourthe R., 25, 26, 538
Ourthe valley, 411
Our valley, 345, 510
Overpelt, 95, 436

P

Palatinate, 206
Pan-Germanism, 167, 276, 283, 292, 294
pannes, 315
Paris, 523, 524, 542
Paris, Treaty of, 1814, 173, 199, 229
Paris, Treaty of, 1815, 174, 199, 229
Pas-de-Calais basin, 368
Pas-de-Calais *département*, 324, 365
Peel marshes, 45
Pellenz valley, 51, 74, 75, 346, 348, 431
Penal settlements, 270
Pepin, 110
Pepinster, 451
Péronne, 523, 541
Pévèle district, 37, 38, 328
Philip Augustus, 116
Philip the Bold, 119
Philip the Fair, 122
Philip IV, 117, 208
Philip the Good, 119, 181, 208
Philip of Spain, 126
Philippeville, 85
Philippeville *arrondissement*, 97
Plaidt, 431, 512
Ploegsteert, 91
Pol de Mont, M., 293
polders, 34, 56, 312, 316
Polignac, 143, 242
Pont-à-Mousson, 524
Pont-à-Mousson basin, 370
Poor Relief, 269, 271
Poperinghe, 303, 317
Porcien district, 48, 71
portions ménagères, 327
Portugal, trade with Belgium, 457
Potzberg coal mines, 374
Poultry-farming, 321
Prayon, 436
Presle, 464
Proisy, 504
Prüm *Kreis*, 74, 340
Prüm R., 27
Prüm valley, 347
Pyrenees, Treaty of the, 171

Q

Quenast, 430
Quiévy, 503

R

Rachecourt, 88, 89
Rainfall, 55
Ramscapelle, 469
Rastadt, Treaty of, 132, 172
Reckem, 92
Reclus, Onésime, 286
Redange *canton*, 336, 337, 339
Reichensperger, Peter, 235
Reims, 522
Remerschen *commune*, 338
Remersdael, 98
Remich *canton*, 73, 335, 336, 337
Remscheid, 515
Renaix, 93, 451, 452
Renaix hills, 36
Rents, 258, 260, 262, 312
Revin, 506
Rheinvoreifel, 51, 52, 75 346, 349, 419
Rhine R., 28, 535, 536, 539, 542
Rhine province, 73, 340, 344, 510, 514
Rhine valley, 46, 55, 56, 64, 74, 344, 345
Rhine–Moselle river system, 26
Rhine and Moselle, department of, 227
Rhisnes, 410
Rhonelle R., 21
Richelieu, 130, 170, 210, 212
Rieux, 503
Rimogne, 506
Rivierette R., 25
Roer, department of, 227
Roermond, 523, 540
Roer R., 26
Roer valley, 345, 379, 388
Roggendorf, 418
Rogier, Charles, 280, 282, 286
Roisel, 503, 523
Roost–Warendin, 499
Rotterdam, 522, 523
Roubaix, 493, 495
Roulers, 77, 92, 453, 454
Roulers *arrondissement*, 91
Rousseau, 135
Ruhrort, 381, 539, 542
Ruhr R., 539
Ruhr valley, 381
Rumania: trade with Belgium, 553, 554
Rumelange, 407
Rumelange–Dudelange *minette* field, 406
Rupel R., 464, 535, 538
Russeignies, 93
Russia: trade with Belgium, 450, 451, 469, 478, 481, 551, 557
Ruysbroeck, 453
Ryswick, Treaty of, 172, 183, 215

S

Saarbrücken, 516, 542
Saarguemines, 539
Saarlouis, 516, 539
Saar R., 536, 539
Saar valley, 373, 405
Sadowa, battle of, 163

Sainghin, 326
St. Amand, 39, 499
St. Aubert, Mont, 37
St. Ghislain, 465
Saint-Hilaire-lès-Cambrai, 502
St. Ingbert, 374
St. Médard, 430
Saint-Michel, 504
St. Nicolas, 77, 93, 451–453, 525
St. Nicolas *arrondissement*, 93
St. Nicolas – Termonde railway, 526
St. Omer, 324, 522, 523, 540
St. Omer plain, 37
Saint-Pierremont, 402
St. Pol, 71, 324, 523
St. Quentin, 503, 523, 537, 542
St. Quentin canal, 537, 540, 541
St. Vith, 103
Saintes, 95
Salm R. (Belgian), 26
Salm R. (German), 51
Salm valley, 345
Salmwald, 50
Sambre R., 25, 536, 538
Sambre valley :
  communications, 523, 525
  industry, 432, 435, 443, 456, 465
  mineral resources, 357, 358
Sambre-Meuse valley, 24
Sambre-Oise canal, 538, 540, 541
Samme R., 22
Sardinia, trade with Belgium, 457
Sarre, department of, 227
Sauer R., 27, 51
Sauer valley, 73, 338, 345, 347
Sauerland, 13
Saventhem, 470
Scandinavian race, 59
Scarpe valley, 498
Scheldt R. :
  communications, 524, 535
  navigation, 127, 130, 136, 145–147, 175, 178, 537
Scheldt, river system, 19, 23
Schiefergebirge, 13, 15, 18, 413
Schinnen, 387
Schmalgraf, 435
Schneifel, 50, 74, 346
Schools, 264, 266, 267, 343
Schwarzer Mann, 50
Sclaigneaux, 435
Sclessin, 451
Sedan, 524, 538, 540, 542
Sedan *arrondissement*, 71
Seine basin, 542
Sélange, 88
Selle R., 21
Semois R., 24, 539
Semois valley, 303, 322, 506
Senne R., 22
Senne valley, 428, 477
Sennette R., 22
Sensée R., 21
Seraing, 98, 359, 448
Seventeen provinces, 123, 125
Seven Years' War, 216
's Hertogenbosch, 540
Siberia : trade with France, 326
Sicily : trade with Belgium, 462
Sierck, 539
Sille R., 22
Sion, hill of, 400
Sirault 465
Sittard, 387, 388
Slesvig-Holstein question, 189
Socialism, 157. 160–162
Société nationale des Chemins de Fer vicinaux, 530
Soignies, 430
Soignies *arrondissement*, 96
Soissons, 540
Solesmes, 502
Solvay, M. Ernest, 459
Somain, 498
Somme R., 29, 536, 539, 541
Somme valley, 523
South Africa : trade with Belgium, 481
Spa, 85, 89, 99
Spa–Luxemburg railway, 526
Spain :
  trade with Belgium, 433, 457, 462, 555
  trade with Germany, 406
Spittel, 375
Stalle, 452
Stanley, Lord (1867), 193
Starbroeck, 45
Stassfurth, 461
Stavelot, 85, 89, 99
Sterrebeck, 451
Stolberg district, 416
Strassburg, 522
Strouanne, 370
Sure R., 27
Sweden :
  trade with Belgium, 457, 472, 478, 557
  trade with Germany, 406
Switzerland : trade with Belgium, 305, 448, 552

T

Talleyrand, 144, 230
Tamines, 97
Tamise, 453, 525
Tanzberg, 418
Taunus, 13
Taviers – Embresin railway, 526
Termonde, 90, 93, 452, 537
Termonde *arrondissement*, 93
Terneuzen, 524, 525
Terneuzen canal, 540
Tertre, 465
Teuven, 98
Thérouanne, 324
Theux, 360, 411
Thiant, 498
Thielt, 92, 453
Thielt *arrondissement*, 92
Thiepval, 523
Thiérache district, 48, 70, 329, 330, 504, 522
Thile R., 22
Thirty Years' War, 207, 212
Thourout, 454, 470
Thuin *arrondissement*, 97
Tilleur, 359
Tintange, 88, 99
Tirlemont, 95, 437, 439, 442, 526
Tongres, 96
Tongrinne, 410
Tourcoing, 493–495
Tournai, 96, 437, 439
Tournai *arrondissement*, 96
Tournai–Jurbise railway, 526
Tournaisis district, 38, 42
Train R., 22
Treaty of June 30, 1816, 232
Treaty of September 3, 1866, 232

Trier, 340, 341, 516, 523, 539
Trier, Electorate of, 205
Trith-St. Léger, 498
Trond, 96
Tubize, 470
Tucquegnieux, 402
Tucquegnieux basin, 401, 402
Turkey: trade with Belgium, 476, 481
Turnhout, 45, 94, 437, 453, 466
Turnhout *arrondissement*, 94
Turnhout canal, 540
Twelve Years' Truce, 129, 175
Twenty-four Articles, 147, 177, 180, 186

U

U. K.: trade with Belgium, 304, 441, 442, 472, 481, 551–585
U. S. A.: trade with Belgium, 306, 445, 458, 471, 481, 551, 552, 556–558
United States of Belgium, 134
Urft R., 26
Üss R., 51
Utrecht, Treaty of, 132, 172, 173

V

Vadencourt, 540, 541
Valenciennes, 498, 522–524
Valenciennes *arrondissement*, 70
Valenciennes coalfield, 367
Valleroy, 401
Valmy, battle of, 221
Van Rijswijk, John, 281
Varengéville, 459
Vedrin, 411, 435
Venlo, 379, 541, 542
Verdun, 522
Verdun *arrondissement*, 71
Verdun, Treaty of, 111
Vergennes, 216
Verlaine, 410
Verlooi, 272
Vermandois district, 48, 501, 503
Verviers:
    language, 85, 89, 98, 99
    industry, 437, 441, 451, 452, 465
Verviers *arrondissement*, 85, 98
Vervins, Treaty of, 129
Vervins *arrondissement*, 504
Vesdre R., 25
Vesdre valley, 451, 452
Vianden, 336, 337, 339, 509
Vicht valley, 416
Vidaigne, Mont, 35
Vieil-Salm, 430
Vieille Montagne, 415
Vieille Montagne Company, 416, 436, 462
Vienna, Act of, 1815, 179, 184, 200, 230, 231, 244
Vienna, Treaty of, 1738, 216
Viesly, 503
Villers-en-Cauchies, 502
Villers-Guislain, 503
Villers-Outreaux, 503
Villerupt, 403
Viroin R., 24
Virton, 89
Virton *arrondissement*, 99
Visé, 522
Viticulture, 332, 334, 335, 338, 340, 344
Vlimmeren, 363
Vonckist party, 135
Vorgebirge, 46
Voulpaix, 504
Vouziers, 540

W

Waes district, 45, 67, 318
Walcheren, Island of, 139
Walincourt, 503
Wallenstein, 213
Wallental, 418
Walloon language, 64
Walloon provinces, birth-rate and death-rate, 76, 77
Walloons, 59, 62
Wandignies-Hamage, 499
War of the Austrian Succession, 133, 135, 173, 216
War of the Polish Succession, 215
Warche R., 26
Waremme *arrondissement*, 98
Warmifontaine, 430
Warneton, 91
Wateringues, 33
Weisserstein, 49, 50
Welkenraedt, 85, 86, 99, 414, 436
Wellenstein, 338
Wellington, 174
Wenceslas of Luxemburg, 116
Weppes, Pays de, 37, 327, 492
Wervicq, 496
Wesel, 516
Westerwald, 13, 57
Westerwald – Sauerland massif, 542
West Flanders Railway Co., 526
West Indies: trade with Belgium, 458
Westphalia, 405, 542
Westphalia, Peace of, 214
Wielspütz, 418
Willebroeck, 437, 439
Willems, John Francis, 276, 280
William, Grand Duke of Luxemburg, 201
William I (of Germany), 242
William I (of the Netherlands), 141, 184, 186
William III (of the Netherlands), 187
William of Orange, 127, 132
William the Silent, 128
Wiltz, 73, 336, 337, 339, 510
Wimpe R., 23
Wittelsbachs, 119
Witten basin, 382
Wittlich, 75
Wittlich depression, 51, 74, 347
Woëvre plateau, 54, 331, 332
Woltz R., 27
Woluwe-St. Etienne, 454
Wormeldingen, 338
Wupper basin, 513
Wurm valley, 379

X

Xanten, Treaty of, 212

Y

Ypres, 90, 91, 115
Ypres *arrondissement*, 91
Ypres canal, 537, 540
Yser R., 28, 535, 537, 540

Z

Zandvoorde, 91
Zeebrugge, 543, 544, 546
Zétrud-Lumay, 95

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